BRITISH MEDICAL JOURNAL:

BEING THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

EDITED BY ANDREW WYNTER, M.D.

No. CXCV.] LONDON: SATURDAY, SEPTEMBER 22, 1860. [NEW SERIES.

Addresses and Papers

READ AT THE

TWENTY-EIGHTH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

[*Held in TORQUAY, AUGUST 1st, 2nd, and 3rd, 1860.*]

THE ADDRESS IN OPHTHALMIC SURGERY.

BY

WILLIAM JOSEPH SQUARE, ESQ.,

SURGEON TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL; AND TO THE ROYAL EYE INFIRMARY, PLYMOUTH.

[*Continued from page* 718.]

CATARACT, and its treatment by operation, have been so long and carefully studied, as to afford little of novelty for our present consideration.

Surgically speaking, cataract is divisible into two varieties, hard and soft; the former being the disease of declining years, the latter, that of early life. For our present purpose, it is correct to add to these capsular cataract, which, practically considered, is traumatic, or a relic of the imperfect cure of the soft variety.

Soft cataract is cured by division with a needle introduced either through the cornea or sclerotic. When I was a pupil, the general practice was, to pass the needle through the cornea at the first operation, and through the sclerotic in the subsequent ones. Now we almost invariably practise keratonyxis or puncture through the cornea in all needle operations.

The needle employed for the division of cataract cannot well be too delicate. This point has been ably and successfully insisted upon by Dr. Jacob, and subsequent operators have abundantly verified the truth of his observations. A very fine needle is sufficiently strong, and does not inflict so much injury upon the cornea or sclerotic as a larger one.

Extraction of Cataract. Some few modifications have been practised of late years in the operation of extraction of cataract.

Beer's knife is used by most surgeons, but its proportions have been altered by operators to meet peculiar views; thus some use a short small knife, others a long and narrow blade.

I well remember that in my early days it was the fashion to make the corneal wound downwards; and I have seen several eyes lost by suppuration, from the entanglement of the lower lid in the incision. The frequency of this accident led to the performance of the upper section, which is now almost universally adopted. Its advantages are too obvious for comment. I have also practised an oblique section looking outwards and upwards, which has answered admirably: indeed, in some cases, I believe it to be the most suitable one. For instance, I operated last year upon a woman whose right eye was the subject of cataract, complicated with complete synechia anterior; I used the outer oblique section, and found it most convenient.

It is plain that, whenever it is necessary to incise the iris, or perform any delicate manipulation incident to an abnormal cataractous state, this section allows more space and facility for its performance, as the brow offers great obstacles to the easy introduction and manipulation of instruments when the direct upper section is adopted.

It is now common to seize the conjunctiva and its subcellular tissue with toothed forceps, in order to steady the globe in operations for strabismus, artificial pupil, etc.; but this plan, so far as I am aware, was not extended to the extraction of cataract until advocated by Mr. France. Having frequently adopted this plan with great advantage, I strongly recommend its general adoption. Everyone knows that the great obstacle to the due performance of the corneal section is the irregular movement of the eye, dependent upon the excitement and nervous agitation of the patient.

Mr. France has written a short paper on the subject in the *Ophthalmic Hospital Reports*. He insists that, 1. The forceps should be moderately broad at the nibs with projecting teeth, so as to seize the subconjunctival tissue as well as the conjunctiva itself.

2. To effect this, the forceps should be pressed firmly against the sclerotic before closing and affixing the tissues in its grasp.

3. The assistant should maintain the cornea in the central position as passively as possible by gentle traction if required, but without dragging or pushing.

4. The operator should adapt his fingers and fix the globe in the ordinary manner, as if no forceps were in use.

5. The corneal incision having been made in the usual way, the forceps should be gently disengaged after counterpunctuation has been fully effected.

This diagram (Fig. 3), imitated from Mr. France's paper, shows the exact period at which the forceps should be disengaged.

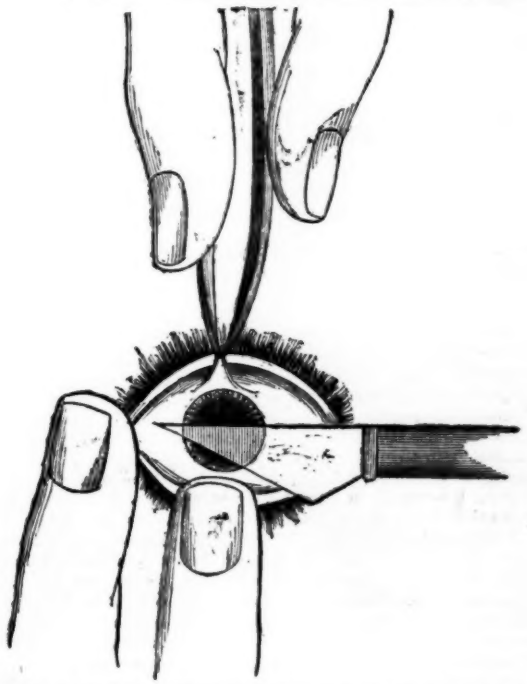

Fig. 3.—Operation for Cataract, shewing period for disengaging the Forceps.

At the Plymouth Eye Infirmary, the eye is closed immediately after the operation, and the lids retained in apposition by the application of ordinary court plaster; sufficient space being reserved for lacrymation. If all proceeds favourably, the plaster remains *in situ* for a week.

I believe that you will concur with me, that the after treatment of the case of extraction of cataract which I now read to you, is full of interest and practical importance, although by no means novel.

In June last, I extracted a cataract from a woman, aged 58. The operation was all that I could wish. Ten days after, the incision had healed; the cornea was clear; the iris was normal

in texture; the pupil black and clear, but a little drawn upwards towards the incision. The vision was good. Her health, however, was feeble, and her nervous system unaccountably depressed. Three days after this, the aqueous humour was found turbid, the texture of the iris confused and muddy, and the conjunctiva loaded with vessels of a dull red colour. The next day there was slight hypopion, and this increased with such rapidity, that in three days the pus occupied the lower fourth of the anterior chamber; vision was now almost abolished. The conjunctival vascularity was dull and intense. I now evacuated the pus by an incision with a broad needle near the corneal margin. The inflammatory symptoms at once receded, and in a few days the eye was nearly normal in all respects, and the vision excellent. The medical treatment throughout consisted of tonics, beer, and full animal diet.

I have reason to believe that I am correct in the statement that the excellent surgeons of the Exeter Eye Infirmary rarely perform extraction; that their experience is strongly in favour of the performance of division, even in the hard cataracts of the aged. I am informed that their patients so treated are well cured. I confess that this has not been my experience; I have rarely used the needle for senile cataract without regret; the tardiness of cure, the number of operations required, and the occasional impairment of retinal power, being the sources of disappointment. Dr. Jacob has recourse to the needle in many cases in which most surgeons would extract; yet he uses the knife in old persons, still stating that, under fifty years of age, the lens once broken in pieces must sooner or later be dissolved, the only question being the time required.

Professor Von Gräfe, in his monograph on iridectomy, says incidentally, "I cannot agree with the experience of English authors, especially of Jacob, as to the excellent action of keratonyxis in partially softened cataracts, even of old people."

Capsular cataract is usually of traumatic origin, or the relic of needle operations. It is most variable as regards extent, thickness, elasticity, adhesions to the iris, etc. Trivial often in aspect, its removal is frequently very difficult, and until of late years, at times impossible.

The Great Exhibition of 1851, among other benefits, gave us two delicate and important instruments, the cannulæ-forceps of M. Luer. They have, since then, been well known and appreciated by the profession. One is simply a delicately toothed cannula-forceps, which requires a previous corneal incision for its introduction; the other combines a sharp point with the forceps. When the capsule is not very firmly adherent to the iris or other structures, these forceps can safely tear it from its feeble connections and extract it; but when the adhesions are numerous, short and firm, the decided use of the instrument is liable to detach the iris from its ciliary attachments, and hence a limit to its efficiency.

In these instances of thick, dense capsule, strongly attached to the iris, Mr. Bowman's mode of clearing the pupil is admirable.

He introduces two straight needles through two different points of the cornea, penetrates the capsule at, or as near to the same spot as possible, and, by separation of their points, the resistance is torn through, and the pupil cleared. A curved needle is at times efficient, and if the membrane is soft or friable, the result is excellent, but it is not so extensively applicable as the cannula forceps or Mr. Bowman's method.

Linear Extraction of Cataract. The operation termed linear extraction, was devised by Gibson many years since; having fallen into disuse, it has of late years been revived. It is applicable to fluid cataract, to certain cases of congenital cataract, or to a very softened condition of the lens, which, when divided by the needle, allows an undue and dangerous quantity of broken up lens to escape into the anterior chamber.

In most instances, the lens is broken up through the cornea with one needle, the puncture enlarged with the broad needle or Beer's knife, and the fragments escape either with the flow of the aqueous humour, or are removed by the scoop.

This operation has of late been employed frequently, and in well-selected cases has been followed by good results.

Depression and Reclination of Cataract are almost in disuse in England, and neither operation is based upon sound scientific principles; still some cases of cataract are so unsuitable for division or extraction, that the surgeon is unwillingly compelled to practise either one or the other of them.

Mr. Vose Solomon has lately practised reclination with two needles. One is passed through the nasal side of the cornea in front of the lens to push it backwards, and to allow ample space for the second needle, which, passed through the temporal side of the sclerotic, traverses the space made by the first needle, is applied against the front of the lens, and is the active agent in the reclining process.

[A diagram illustrating Mr. Solomon's method of reclination appeared in the British Medical Journal for April 2nd, 1859.]

Artificial Pupil. When, by accident or disease, the natural pupil is obscured or obliterated, the surgeon is often able by artificial means to establish a passage for the rays of light to the retina. The ocular conditions which demand this operation are obviously so numerous as to require various modifications in the mode of its performance. Most of the old methods were rude, and dangerous to the transparent lens, and few cases were deemed suitable for any operation.

As science has advanced and mechanical art has become perfected, the number of eyes submitted to operation for artificial pupil has been larger, the success more certain, the result more encouraging and satisfactory.

Until Mr. Tyrrell invented his iris-hook, no instrument existed, which, even in skilful hands, could enlarge or displace the pupil without endangering the lens. This hook is now in constant use. Its recess is long, and its extremity rounded to avoid injury to the lens or its capsule. An opening being made in the cornea about a line from the sclerotic with a broad needle, the hook is introduced, passed through the pupil, and the iris being engaged in its loop is drawn through the corneal wound, and either excised, or allowed to remain strangled in it.

The invention of Luer's cannula-forceps and Wilde's cannula-scissors has established a new era in the history of operations for artificial pupil.

The former is now often used where Tyrrell's hook was previously the instrument selected. It has the advantage of being suitable for the operation of artificial pupil when the lens remains transparent. Thus, if the pupil is quite obliterated, a transparent lens behind it, and it is desirable to form a new pupil near its centre, the cornea is opened with the broad needle near the corneo-sclerotic junction; the closed cannula-forceps entered; the anterior surface of the iris seized, drawn through the corneal opening, and an adequate portion is excised.

Within the last two years, Mr. Critchett has invented a new and valuable operation for artificial pupil, which he terms *iriddesis, i.e.*, tying of the iris, from *ἰρις*, the iris; *δεσις*, a tying. He states that it is applicable to nearly every variety of case in which an artificial pupil is required; it enables the surgeon to regulate with accuracy the size and position of the pupil he proposes to make; it insures to it a defined boundary and the natural mobility (provided some portion of the pupil in its natural state existed prior to the performance of the operation); it secures stability to the new pupil, so that it will continue of the form and size just made." These are great and important advantages, offered by no other artificial pupil operation with which I am acquainted. Mr. Critchett says it has been adopted, with favourable results, in the following group of cases.

I. Central leucoma corresponding in size and position to the natural pupil.

II. When there has been a penetrating ulcer of the cornea, with some surrounding opacity, and the pupil altered in shape, diminished in size, and drawn towards or behind the opacity.

III. In cases of opaque capsule with adherent pupil, in which it is desirable to enlarge the pupil slightly in one direction, so as to expose a clear part of the lens.

The operation is thus performed. The patient, if not very resolute, is well chloroformed, to insure perfect quietude. The eye is exposed fully with the spring wire speculum. A broad needle is then entered close to the corneo-sclerotic junction, and an opening established, of just sufficient size to admit the cannula-forceps. A small loop of moistened floss silk is then laid on the eye over the corneal opening; the cannula-forceps is passed into the anterior chamber, encircled by the loop of silk; the iris is then seized midway between the ciliary and pupillary margins, or, if possible, rather nearer the former, and withdrawn to the requisite extent. An assistant lays hold of the ends of the loop with two small broad-nibbed forceps, and carefully ties it upon the eyes, so as to include and strangulate the portion of iris drawn out. The ends of the silk are then cut off, and the process is completed. The only objection which Mr. Critchett makes to the operation is an occasional tendency of the loop of silk to be drawn into the anterior chamber. This is obviated by making the corneal wound small, by inclosing

the entire prolapsed iris with the silk, and leaving the ends of the loop long, so that they may readily be seized and withdrawn at the proper moment.

Mr. Critchett ends his last paper on the subject in the *Ophthalmic Hospital Reports* thus: "I believe that it possesses important advantages over every method hitherto proposed, and that it enables the operator to insure every optical advantage that the nature of the case and the previous condition of the eyes permit; and I confidently anticipate its very general adoption."

You will observe how very different this operation is from every other now in use, inasmuch as it preserves a free and pupillary margin, which by the older method was always sacrificed. The pupil also is more central, and therefore opposite to the most sensitive parts of the retina—a most important advantage, as, for the finer purposes of vision, a small or imperfect central pupil is more useful than a better pupil placed excentrically. Again, the iris-fibres are not torn nor divided; and the artificial opening is made of a definite size, which could not be attained with any certainty by any of the old operations.

I entertain a very high opinion of the merits of iriddesis, and esteem it to be a very ingenious, scientific, and practical discovery. I have selected the following case from my own practice, as an illustration of the operation.

Case. Edward Brown, aged 35, a healthy looking sailor, came under my care in June last. In August 1859, while in China, he was attacked by purulent ophthalmia, which totally destroyed the cornea of his left eye, and led to the formation of a dense and extensive leucoma of his right cornea. This opacity covered all the upper parts of the cornea, and extended so low that the lower margin of the pupillary aperture was only visible by raising his head and looking upward under the leucoma. He could not see if any person was before him at a greater distance than six feet, and could dimly distinguish the bars of a window at two feet. On the seventh day of June last, I performed upon him the operation of iriddesis, as before described. Slight vascularity succeeded; but in ten days he could distinguish men from women in the street at thirty yards, whether there were one or two horses in a carriage, as well as their colour, at forty yards; and could read printing an inch long at eight feet.

The advantage gained would have been much greater, but the cornea was hazy even at its most transparent part, opposite to which the new pupil had been formed. This diagram (Fig. 4) explains the condition of his pupil before and after iriddesis.

A B

Fig. 4.—A. Before Iriddesis. B. After Ireddesis. *a a*, Leucoma. *b*, New Pupil.

In No. 9 of the *Ophthalmic Hospital Reports* is an important paper by Mr. Bowman, on Conical Cornea, and its Treatment by a New Operation. He points out that, up to the present time, nothing conclusive or satisfactory has been devised for the relief of the results of conical cornea. Many operations have, indeed, been invented; but no certain benefit has been derived from them. Professor Von Gräfe has used iridectomy, which, by diminishing intraocular pressure, has in same cases been advantageous. But many eyes affected with conical cornea are abnormally soft.

It has long been known that an eye the subject of conical cornea sees better when a slit or diaphragm is placed in front of it; but it is difficult to adapt an apparatus which is practically available.

Reasoning upon this fact, Mr. Bowman concluded that a slit-like aperture in the eye might accomplish what is requisite. During the last two years, he has experimented upon the form of pupil most effectual in the improvement of vision. He has operated upon six cases, with satisfactory results. Mr. Bowman has called to his aid Mr. Critchett's operation of iriddesis, to produce the end desired; viz., a slit-like pupil, capable of contraction and dilatation. The corneal opening is made with a broad needle, as in ordinary iriddesis. In his first operations, he used the cannula-forceps to seize the iris about one-third from its pupillary margin, this margin being left free in the aqueous chamber. In subsequent ones, he has found it more effectual to seize the margin of the iris with a short Tyrrell's hook, which is a simpler method, and less liable to injure the iris, and affords greater precision in affixing the pupillary edge to the wound. After the iris is drawn through the corneal opening, it is tied as in ordinary iriddesis.

It is very necessary that there should be an accurate correspondence between the hook and the corneal wound, so as to permit the ready entrance of the hook, and yet be small enough to prevent the return of the ligature into the anterior chamber. In some instances, Mr. Bowman has executed only one iriddesis, by which a balloon-shaped pupil is formed, as in Fig. 7; but, in most cases, two operations have been performed, the one exactly opposite the other, and the second a week or ten days after the first.

This has produced a slit-like or elliptic pupil. He has also modified the pupillary direction, sometimes making it vertical, and at others horizontal. He gives the preference to the former, as presenting a more agreeable cosmetic effect, and also as practically diminishing the size of the pupil in ordinary vision by the overlapping of its angles by the lids. He truly observes: "It is difficult to render a pupil smaller by operation; indeed, its natural tendency is to enlarge it." Therefore the slit-like aperture, and especially the vertical one, the result of a double iridesis, renders the pupil equal in size, if at all larger than the normal one. The improvement in vision has in some instances been most gratifying. The influence of the operation in reducing the corneal convexity has also been remarkable, and appears to arise from a modification of ocular tension, a like influence to that which is said to be produced in glaucomatous eyes by iridectomy.

Mr. Bowman advises an early operation in slight cases by one iriddesis, merely to arrest the progress of the disease, the second iriddesis being supplemented if it becomes necessary; but he depends upon future observations to test the accuracy of this proposition.

Fig. 5.—Iriddesis: Horizontal Pupil. *a*, dilated; *b*, contracted.

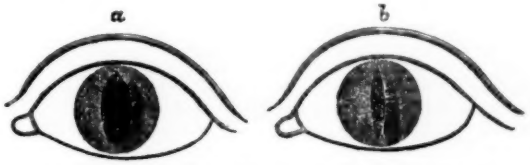

Fig. 6.—Iriddesis: Vertical Pupil. *a*, dilated; *b*, contracted.

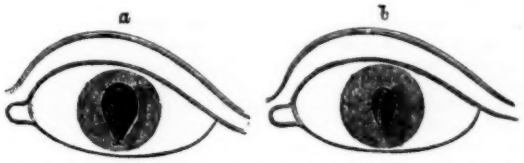

Fig. 7.—Iriddesis: Balloon-shaped Pupil. *a*, dilated; *b*, contracted.

These diagrams (Figs. 5, 6, 7), taken from his paper, show the form of the pupils, dilated and contracted.

[*To be continued.*]

Means of recognising Ergot of Rye. M. Wittstein has recommended a means of recognising ergot of rye when mixed with farinaceous substances, depending on the disengagement of trimethylamine, which takes place when ergot of rye is mixed with solution of potash. The suspected substance is mixed with a little water, introduced into a tube, and covered with a layer of solution of caustic potash. In a little time an unmistakable odour of brine is developed, which is increased by heat, but is then quickly dissipated. (*Pharmaceutical Journal*, September.)

A Course of Lectures

ON

URINE, URINARY DEPOSITS, AND CALCULI.

DELIVERED AT THE PATHOLOGICAL LABORATORY, DURING THE SESSION 1857-58.

BY

LIONEL BEALE, M.B., F.R.C.P., F.R.S.,

PHYSICIAN TO KING'S COLLEGE HOSPITAL; PROFESSOR OF PHYSIOLOGY AND OF GENERAL AND MORBID ANATOMY IN KING'S COLLEGE, LONDON; ETC.

Lecture VII.

Urine in Disease. *Insoluble Substances in Urine.* 1. *Floating on the Surface, or suspended through the Fluid.* Urinary Deposits. 2. *Light and Flocculent Deposits.* 3. *Dense and Opaque Deposits.* 4. *Granular and Crystalline Deposits.* Examination and Preservation of Urinary Deposits. *Collecting Urine for Microscopical Examination. Period when the Urine should be examined. Removal of the Deposit from the Vessel containing it. Of Collecting a very small quantity of a Deposit from a Fluid. Magnifying Powers required in the Examination of Urine. Of the Chemical Examination of Urinary Deposits. Examination of the Deposit in the Microscope. Of Placing the Deposit in the Preservative Fluid. Refractive Power of the Medium in which Deposits are mounted. Media in which Urinary Deposits may be preserved. Of Keeping the Deposit for subsequent Inquiries. Of Preserving Deposits permanently. Mucus, Epithelium, Fungi, and Vegetable Growths. Spermatozoa. Casts. Pus. Phosphates, Urates, Blood-Corpuscles, Uric Acid, Cystine, Oxalate of Lime. On Preserving Crystalline Substances which are more or less Soluble in Water.* Of Extraneous Matters of Accidental Presence. *Larvæ of the Blow-fly. Hair. Cotton and Flax Fibres. Portions of Feathers. Silk. Fibres of Deal from the Floor. Starch-Granules. Portions of Tea-Leaves. Milk. Sputum. Epithelium from the Mouth. Vomit.*

[*Continued from p.* 720.]

On the Preservation of Urinary Deposits as Permanent Microscopic Objects.

A desire has been generally expressed that a series of the most important urinary deposits should be kept for sale, so that practitioners might have an opportunity of readily obtaining named specimens, with which the deposits that from time to time fall under their notice might be compared, and their nature recognised. Persons who prepare and sell microscopic objects have found great difficulty in preserving urinary deposits satisfactorily; and many specimens which have been purchased have been found to lose their characters after a few months, and have soon become quite useless objects. Feeling strongly the real practical value of preparations of this kind, it seems to me very desirable that a few rules with regard to the preservation of urinary deposits should be laid down; and I therefore propose to allude briefly to the different plans which I have found to succeed best. I hope that, shortly, there will be no difficulty in obtaining series of well-mounted and illustrative specimens.* At the same time, any one attending hospital practice, who has a little time at his disposal, can, without much trouble, prepare such preparations for himself.

The different characters of urinary deposits render necessary different plans of preservation. It is, therefore, desirable to consider the nature of the deposit before we attempt to preserve it. Some deposits may be preserved *dry*, others may be mounted in *Canada balsam*. A certain number exhibit their characters very well if preserved in *glycerine*, while many can only be kept in certain *aqueous fluids*.

Of placing the Deposit in the Preservative Fluid. After the deposit has been allowed to settle in a conical glass, the supernatant fluid is to be poured off; and if it is to be mounted *in fluid*, a quantity of the preservative solution, equal in bulk to the urine and deposit that remain, is to be added. After the deposit has again settled, the fluid is to be poured off and replaced with an equal portion of fresh preservative solution. In this way the deposit is washed clean, and properly impregnated with the preservative fluid.

When preparations are to be preserved in a fluid medium, a small shallow water-tight cell is to be used. The specimen and its preservative fluid being placed in the cell, the thin glass is applied, and the cover cemented in its place with the aid of Brunswick black or other cement. (*How to Work with the Microscope.*) In washing urinary deposits prior to mounting them, it is often necessary to add some compound to the water used for this purpose, in which they are known to be insoluble; and sometimes it is desirable to add some substance to increase the density of the fluid; for which purpose, certain salts, syrup, or glycerine, may be employed, according to circumstances. Many deposits, although soluble to some extent in pure water, are quite insoluble in a weak acid; others are insoluble in a weak alkali or in certain saline solutions. Again, it is sometimes desirable to separate certain substances in the deposit from others, and this may be effected by special chemical solutions which have the power of acting on the one and not upon the other; or, in cases where one is more dense than the other, by agitating the deposit with water, and, after allowing time for the heavier one to settle, pouring off the lighter one into another vessel, to subside there. From this, it may be collected in the usual way.

If the preparation is to be preserved as a *dry object*, water is to be added in the first place; and a portion of the deposit, which has thus been carefully washed, is to be removed with the aid of a pipette to the glass-slide, and the fluid allowed to evaporate, the whole being covered by a bell-jar, and placed over a dish of strong sulphuric acid. When dry, it is to be protected from dust by a thin glass cover. The glass cover is easily prevented from pressing upon the preparation by interposing a thin piece of paper or cardboard; or a thin India-rubber ring, which may be easily fixed to the glass-slide and thin glass cover, by a little gum made into a thick paste with whiting, may be used.

If the specimen is to be mounted in *Canada balsam* or turpentine, it is to be dried in the manner just described, warmed slightly, wetted with the balsam, and mounted with the usual precautions. (*How to Work with the Microscope.*)

Refractive Power of the Medium in which Deposits are Mounted. The appearance of objects in the microscope depends very much upon the medium in which they are immersed; and many structures are so altered in their character by different media, that they would hardly be recognised as the same object. It may be said generally, that the darker the object, and the more dense its structure, the higher should be the refractive power of the medium in which it is mounted—thus the dark coloured uric acid, or the thick spherical crystals of carbonate of lime, and the dumb-bells of oxalate of lime, exhibit their structure to the greatest advantage when mounted in the highly refracting *Canada balsam*, or in *strong syrup* or *glycerine*, while the beautifully transparent octohedra of oxalate of lime would be scarcely visible in these media, and require to be mounted in an aqueous fluid which possesses a lower degree of refractive power. Many of these objects, when mounted dry, appear quite dark, and scarcely exhibit any structure at all, in consequence of great difference in the refracting power of their substance, and the air by which they are surrounded. From what I have said, it will be evident how important it is to examine the same object in different media—in fact, it is quite impossible to form an idea of the real structure of many specimens, without proceeding in this manner. (*How to Work with the Microscope*, p. 59; and *The Microscope in its Application to Practical Medicine*, second edition, sects. 74, 89, and 90.)

Media in which Urinary Deposits may be preserved. Urinary deposits may be mounted in *air*, in *turpentine*, *oil*, or *Canada balsam;* in *glycerine*, in *gelatine and glycerine*, in *solution of naphtha and creasote*, in *certain saline solutions*, in *weak spirit*, and in some other aqueous solutions, which will be alluded to. The "*glycerine*" which I use is *Price's patent glycerine*, diluted with water.

The composition of the naphtha and creasote fluid, above referred to, is as follows:—

Solution of Naphtha and Creasote.

Creasote	3 drachms.
Wood naphtha	6 ounces.
Distilled water	64 ounces.
Chalk, as much as may be necessary.	

Mix first the naphtha and creasote, then add as much pre-

* Specimens of urinary deposits may be obtained of Messrs. Smith and Beck, Coleman Street, City; Mr. Tennant, 149, Strand; and Mr. Matthews, surgical instrument maker, Carey Street, Lincoln's Inn Fields.

pared chalk as may be sufficient to form a smooth thick paste; afterwards add, very gradually, a small quantity of the water, which must be well mixed with the other ingredients in a mortar. Add two or three small lumps of camphor, and allow the mixture to stand in a lightly covered vessel for a fortnight or three weeks, with occasional stirring. The almost clear supernatant fluid may then be poured off and filtered, if necessary. It should be kept in well corked or stoppered bottles.

Of keeping the Urinary Deposit for subsequent inquiries. In cases where it is desirable to retain a certain quantity of the deposit in the preservative solution for subsequent examination, or for the purpose of making more preparations, it should be kept in a small glass tube, with a tight fitting cork, and carefully labelled. Most urinary deposits may be kept for a longer time in this manner, than mounted in thin cells. I propose now to describe briefly the various plans adapted for the preservation of urinary deposits which I have found to succeed best.

First Class Urinary Deposits.

Mucus. It is very difficult to preserve the character of the so-called "mucus corpuscles", or imperfectly formed epithelial cells, nuclei, and granules, which constitute the slight flocculent deposit met with in healthy urine, and termed "mucus". The naphtha and creasote solution is best adapted for the purpose, and it is desirable to place the specimen in a cell about the twentieth of an inch in depth.

Epithelium. The different varieties of epithelium are easily preserved, although, after the lapse of some time, minute oil globules make their appearance in them. They may be kept in naphtha and creasote fluid, to which one-fourth of its bulk of glycerine has been added. It is well to put up specimens of epithelium from the urethra, bladder, ureter, and pelvis of the kidney, removed from the organs of a healthy man who has been killed accidentally. They should be mounted in very thin cells. Specimens of the epithelium from the vagina, which can generally be obtained from the urine of females, should also be preserved.

Vegetable Growths: Fungi. I have found that fungi may be preserved most satisfactorily in glycerine, for although they appear somewhat more transparent in this fluid than in urine, they preserve their general character better than when immersed in other preservative fluids. It is necessary to add weak glycerine in the first instance, and to increase the strength gradually, otherwise the fungi become collapsed, owing to the great density of the strong solution. A solution composed of equal parts of water and Price's glycerine is sufficiently strong to preserve fungi. I have not been able to preserve specimens of sarcinæ which I have met with on two or three occasions in the urine, probably in consequence of their extreme delicacy. The sarcinæ which are from time to time met with in vomit keep perfectly well, and preserve their recent characters in glycerine.

Spermatozoa are sometimes mounted in the dry way; but although their general form is preserved, their refractive power and transparent appearance are so different from what is observed when they are immersed in urine, that little is gained from such preparations. Spermatozoa keep very well in glycerine, although they appear rather more faint than in an aqueous fluid. They should be examined with the *eighth of an inch object-glass* (× about 400); but when the eye of the observer has become familiar with the general appearances, they may be readily recognised with a quarter of an inch object-glass (× about 200).

Casts. It is not difficult to preserve the character of some varieties of casts. The transparent casts often become covered with numerous minute granules and oil globules, and their character much altered. Granular casts and epithelial casts often keep very well in the naphtha and creasote solution; but altogether I prefer glycerine, with one-third part of water. Although in many instances the cells they contain are altered, and oil globules appear much more transparent than when in urine, this alteration in character may be easily allowed for. I have some specimens of large waxy casts and epithelial casts which have been kept in the naphtha and creasote solution for upwards of seven years, and still preserve their characters well. The specimens in glycerine, of course, keep admirably. Some casts may also be preserved in gelatine and glycerine, care being taken that the mixture is not made too hot.

Second Class of Urinary Deposits.

Pus. Recent specimens of pus may be so readily obtained that it is hardly necessary to attempt to preserve the corpuscles permanently. Their characters alter so much in all the preservative fluids that I have tried, that after they have been put up for some time, it would be difficult to recognise the nature of the preparation.*

Phosphates. The phosphate of lime, in its amorphous form, in globules, and minute dumb-bells, is easily preserved in weak spirit, naphtha and creasote fluid, or glycerine; but the character of the crystals of the triple, or ammoniaco-magnesian phosphate, could not be retained in this solution. As is well known, this salt is quite insoluble in solutions of ammoniacal salts, and these make the best preservative solutions for it. Crystals of triple phosphate may be kept for any length of time, with their smooth surfaces and their lustre unimpaired, in distilled water, to which a little chloride of ammonium has been added. Phosphate of lime and the stellar form of triple phosphate may be dried carefully, and mounted in Canada balsam; but, of course, the appearance of the crystals is a good deal altered.

Urates. As the urates are so commonly met with, and as they are generally deposited in the form of granules, there is scarcely any need of mounting them as permanent objects. If desired, however, deposits of this kind may be preserved by adding a little naphtha and creasote fluid to the deposit, which should be left in it for a considerable time before it is put up. Urates which crystallise in small spherical masses, as often occur in the urine of children, and more rarely in irregularly branched processes, may be preserved very well in Canada balsam, or, if preferred, they may be kept in the naphtha and creasote fluid.

Third Class of Urinary Deposits.

Blood Corpuscles become more or less altered in most preservative fluids. I think that those which I have mounted in glycerine (one part glycerine to two parts of water) have undergone the least change.

Uric Acid Crystals are easily preserved as permanent objects. The usual plan is to mount them in Canada balsam. They should be washed, in the first instance, with a little water, to which a few drops of acetic acid have been added. When pretty clean, they may be placed upon a glass slide, with the aid of a pipette, and the greater quantity of the fluid absorbed with a small piece of bibulous paper. After the crystals have been properly arranged on the slide with a needle, they may be dried, by exposure under a bell jar over a dish containing sulphuric acid. When quite dry, they may be moistened with a drop of turpentine, and mounted in Canada balsam. In this operation, a very slight heat should be employed, otherwise the crystals will become cracked in all directions, and more or less opaque. Uric acid crystals, as a general rule, do not keep well in glycerine. In cases where we wish to preserve other substances in the deposit as well as uric acid crystals, the naphtha and creasote fluid will be found to answer very well. I have some preparations mounted in this manner, which were put up six or seven years ago.

Cystine. Crystals of cystine may be preserved in Canada balsam, the same care being taken in mounting them as mentioned under uric acid, or they may be kept very well in distilled water, or in the naphtha and creasote fluid, to which a little acetic acid has been added.

Oxalate of Lime. Both the octohedra and dumb-bells may be preserved in glycerine; but the former look very transparent in that fluid. The dumb-bells may also be mounted in Canada balsam, but in this medium the octohedra are almost invisible. When required for polarising, they should be put up in balsam. The dumb-bells keep very well in glycerine.

On Preserving Crystalline Compounds obtained from Urine. It is exceedingly difficult to preserve many of the crystalline substances obtained from urine in a moist state; but several of them form beautiful microscopic objects when carefully dried. *Urea, nitrate of urea, oxalate of urea, creatine, creatinine, alloxan, hippuric acid, murexid,* and many others, may be kept as permanent objects in this manner. In order to prepare them, it is better to cause them to crystallise upon a glass slide; allow the mother liquor to drain of, and immediately place the slide under a bell-jar over sulphuric acid. Sometimes the crystals may be made in a small evaporating basin, and when drained and dried, a portion of them may be removed to a glass cell, and covered with a piece of thin glass to exclude the dust. Many crystals may be examined and preserved for a considerable time in their own mother liquor, especially when they are very slightly soluble in fluid; but, as a general rule,

* Dr. Andrew Clarke speaks highly of some fluids, containing bichloride of mercury and arsenious acid, which he has prepared. (*The Microscope in its Application to Practical Medicine*, second edition, p. 237, note.)

this plan does not answer very satisfactorily, for, independently of the escape of the fluid from the edges of the cell, a few of the largest crystals grow still larger at the expense of the smaller ones, and the beauty of the specimen is destroyed. The different forms of these crystals, as they appear in the microscope, are given in the *Illustrations of Urine, Urinary Deposits, and Calculi.* (Urine, plates I to IX.) See also *The Microscope in its Application to Practical Medicine*, chapter IX, page 292.

[*To be continued.*]

Original Communications.

WARTY VEGETATIONS NEAR THE ANUS, AND THEIR TREATMENT.

By THOMAS T. GRIFFITH, Esq., Wrexham.

IN a clinical lecture by M. Nélaton, reported in the *Journal de Médecine et de Chirurgie Pratiques* for February last, he relates the case of a girl about 14 years of age, who was the subject of a very extensive growth of warty vegetations, seated partly within the anal orifice and partly around it, and attached to the skin by a membranous connexion. Its surface was granular, cracked, and secreted a sero-sanguinolent fluid. The anus seemed lost in the enormous cauliflower-looking mass, but still it retained its normal diameter. The disease might have been supposed to be syphilitic; but, after a careful consideration of all the special circumstances of the case, M. Nélaton decided against such an opinion; he also expressed doubts as to the disease commonly having such an origin. He had often seen patients labouring under it who had had no venereal taint, and others who never had had sexual intercourse; though he believes that patients actually syphilitic, or those frequently liable to it, are more likely to become the subjects of this morbid growth than others. He viewed it as an accident purely local, resulting from varied and combined causes. He advises caution in receiving the patient's own statements, and thinks it best to give a decided opinion only when it can be based on authentic facts. His treatment is entirely local. His patient was chloroformed, and the mass was removed by a ligature of annealed iron drawn so tight as to act as an *écraseur*. The raw surfaces were painted with perchloruret of iron, which acted as a styptic; and mild cauterisation, etc. For a few days afterwards, the parts were bathed with camphorated spirits. The cure was speedy and complete, and no fears of the return of the disease were felt.

My object in giving an abridged account of this case is to introduce one similar to it in its leading particulars.

CASE. Mr. J., aged 35, married, of good general health, about two years ago was aware of small warty growths near the anus, which gradually increased, extending along the opposed surfaces of the nates. They acquired in time a considerable size, and were occasionally sharply painful and inconvenient. Little or no discharge formed on the surface.

I saw the patient in January last, and advised the removal of the mass, which now occupied a space of about six square inches. The anus could only be discovered by the forcible separation of the nates. The growth seemed to consist of warty vegetations, each of which had its own independent root in the skin; but, as they grew close and parallel to each other, they formed masses most like the cauliflower, with granular cracked surfaces of a brownish colour. They showed no disposition to bleed on being touched, though doing this caused exquisite pain, which, I believe, arose from sensitiveness in the subjacent skin, and not from the growth itself.

The patient was placed as for lithotomy, and I removed, partly with a scalpel, but more readily with strong scissors curved on the flat, nearly the whole mass, when the patient felt very ill; and as he became rather faint, and the bleeding was free, I left a portion immediately around the anus, and stopped the bleeding by the free use of tincture of sesquichloride of iron. It, however, returned to some extent in the night. The next day, the patient was comparatively well, walked out, and in a few days resumed his professional duties. The portions that remained were, after a few months, entirely removed, and the patient was at once restored to a state of ease and comfort that he had not felt for a length of time.

The skin operated on very rapidly regained its usual healthy state and appearance.

In this case, there were no grounds for suspecting any specific taint, as the patient never had syphilis or gonorrhœa in any form.

[It may not be generally known that caustic marks on the hands, of some days standing, may be removed by a *strong* solution of iodide of potassium rubbed *well* over the surface; and, by applying afterwards a little liquor potassæ, the skin is restored to its usual soft smooth state.]

AN OBSCURE CASE.

By W. SANKEY, Esq., Dover.

WM. HENRY BEW, aged 13 years, applied to me on the 4th September 1860, with the following symptoms: excessive weakness, emaciation, constant thirst, feeble pulse, coated tongue, and dry hands. He complained of no pain. His mother stated that from his birth he had been healthy and strong, and fond of active pursuits; but that within the last three weeks he had rapidly lost flesh and strength. On inquiry, I found that he passed a large quantity of limpid urine, and wetted his bed every night.

I prescribed three grains of hydrargyrum cum cretâ with two grains and a half of Dover's powder at night, and a mixture of nitric and hydrochloric acids with quinine thrice daily. I requested to have some of his urine for analysis at his next visit.

September 7th. I received a message to visit him on that or the following day, as he seemed much worse. About nine in the evening, a second message came; and I lost no time in going to see him at about three miles distance.

On my arrival, I found him rapidly sinking. The extremities were cold; the pulse was scarcely perceptible; he was perfectly conscious, complaining of nothing but thirst. Death did not take place till eight hours afterwards. I applied for permission to make a *post mortem* examination, but did not obtain it. Leave was given to pass a catheter with a view to obtain some urine for analysis; but the bladder was found empty.

Transactions of Branches.

CAMBRIDGE AND HUNTINGDON BRANCH.

A CASE OF EPILEPSY, WITH SOME UNCOMMON SYMPTOMS: AND A COMMENTARY THEREON.

By G. E. PAGET, M.D., F.R.C.P., Cambridge.

[*Read at Cambridge, July 10th*, 1860.]

IT is well known that the convulsive phenomena of epileptic fits differ more or less in different patients, and that the same patient is not unfrequently subject to attacks of two kinds differing in some respects, generally in the degree of their violence. It is unnecessary for me to dilate on this fact, or describe any of the more frequent deviations from the normal type; but in the case I am about to relate, and in which the attacks are of two different kinds, the minor attacks are exceedingly peculiar. They assume a form which I never before witnessed, and which is, I believe, in the highest degree rare.

D. C., an agricultural labourer, residing with his parents at Meldreth, aged 20, and unmarried, was admitted an in-patient at Addenbrooke's Hospital, on July 2nd, 1856. From that time until August 1858, he was almost continuously under observation, either as in- or out-patient. At first, he was under the care of Dr. Bond; afterwards, for a long period, under my care; and for a short time under that of Dr. Fisher. My notes of his case extend, in detail, with few interruptions, over two years; and on the 16th of last month, he was again (after a long interval) admitted to the Hospital, and is at the present time one of its inmates.

He had (and has) much of the ordinary appearance of an agricultural labourer: a robust figure, a head not ill shaped, but the occiput and nucha are large, and his forehead looks heavier than it did in 1856. His features are regular, but have a dullish grave cast. His intelligence is of an ordinary kind,

without the smallest pretensions to brightness. From his looks, one would infer him to be as free from nervous excitability as his class commonly are.

At the time of his first admission to the Hospital, in July 1856, he had been subject for three weeks to violent epileptic fits. He had had six of them before his admission; and similar attacks recurred from time to time during the two years he was under observation. These fits were of the ordinary type of a complete epileptic fit: the insensibility profound, the spasms violent, the mouth frothy, the tongue sometimes bitten, the urine passed involuntarily; sometimes the seizures took place in his sleep, and all of them ended in coma. The longest interval between any two of the fits was about seven weeks; but in general the interval was much shorter. On three occasions, the fits occurred in paroxysms or groups—as many as seven, nine, or eleven succeeding one another, without any recovery of consciousness in the intervals. On one of these occasions, it seemed not improbable that he would have succumbed either to exhaustion or suffocation, the larger bronchi and trachea having become filled with mucus. I was examining his pupil in one of the intervals of coma; and as the next fit came on, I saw it change from a state of extreme contraction to one of wide dilatation. The spasms in this fit were more tonic than clonic.

Of these regular epileptic fits, I have no more to say. They possess no special interest, except in their relation to the peculiar symptom, which has induced me to bring the case under your notice.

This peculiar symptom was *frequent bursts of unmeaning laughter*. They occurred day after day, and several times in the day. He had been subject to them for the eight or nine months which immediately preceded the regular epileptic fits; the first of them having come on in the field, while he was ploughing. They were witnessed, times without number, while he was in the hospital, by the nurse, the other patients, by many of the pupils, by Mr. Carver (then house-surgeon), and on some few occasions by myself. There was, I believe, no difference of opinion as to their being perfectly involuntary. Their occurrence was always sudden, and without obvious cause, and seemed wholly independent of external circumstances or time of day. They occurred not only by day, but quite as often by night, and while the patient was asleep. In answer to my inquiries, he said they were not attended with any ideas of fun or jokes, or any sense of the ludicrous. He was not conscious, formerly, of any cause for the laughter. More recently, he has got a notion of their cause, to which I shall hereafter refer.

The duration of the laughter was only about a minute, and then it generally ended, like the ordinary laugh of a person who has been amused by something ludicrous; but on some occasions it was rather more prolonged, and was accompanied by movements of the shoulders and legs, and on more than one occasion he fell back upon the bed, on the edge of which he had been sitting.

The first of the laughing fits witnessed by myself was on September 10th, 1856. I happened to be in the ward when he was seized. He was in a small room opening into the ward, and was standing at a sink washing his face. I suddenly heard a laugh, and on looking round saw him laughing, as it were, heartily. The sound of the laugh was not loud and unnatural, like that of hysteria. His face had the expression which ordinarily accompanies a hearty laugh. His shoulders were advanced alternately, and moved also from side to side with the trunk, in a manner which would have been natural in a person excited by great merriment. After a few seconds he began to dance, in the way in which some persons of very excitable temperament are apt to do when highly delighted, lifting his feet high, much in the way in which Irishmen are represented dancing at a wake, or as Dutch boors at a fair in the pictures of Teniers. He did not fall, or seem likely to fall, and was not convulsed, unless the laughter and movements associated with it be regarded as convulsive. On the nurse calling him sharply by his name, the laughter and movements speedily ceased, and his face assumed in a moment its habitually dull and serious look. The suddenness and completeness of the change in his expression were very curious and striking.

In reply to my inquiries, he said that he did not know why he laughed, except that he could not help it; that his laughter was not excited or accompanied by any ludicrous idea; that he was quite conscious of our looking at him during the fit, but could not restrain himself. The nurse informed me, that it was only within the last week that the attacks had exhibited the dancing accompaniment, and that the one I had witnessed was a more lively one than usual, presenting more of the dancing and other movements associated with the laughter.

I have notes of another attack which I happened to witness in March 1857. On this occasion he did not dance. He laughed with apparent heartiness, swinging himself about while holding on with one hand to a bed-post. The expression of his face was exactly that of a person enjoying a good joke, and, when the attack ended, the suddenness of the change to his ordinary dull and grave look was exceedingly curious. He said as usual, in answer to my inquiry that no ludicrous thought had been in his mind during the attack.

These two laughing attacks, which I have described from my own observation, were accompanied with more of the general movements of the body than were frequently noticed on other occasions. The more common seizures consisted of a simple burst of laughter, coming on suddenly and ceasing abruptly.

In August 1857, he began to pass his urine involuntarily in these laughing attacks, as he had previously done in the complete epileptic fits.

The number of laughing fits in the twenty-four hours was generally about three or four, but their number varied from one to eleven, or even more. In one night as many as 16 were counted, in another night 18, and on a third occasion the nurse reckoned as many as 30 slight attacks in the twenty-four hours. In the period of more than four years, he has rarely passed twenty-four hours without at least one attack of laughter. Now and then, a suspension of the laughter for a single day, together with heaviness and drowsiness, would be precursory of one of the severe epileptic seizures. On the other hand, it happened not unfrequently that a laughing attack passed directly into a complete epileptic fit, the former appearing as an initial symptom of the latter.

When the laughter occurred at night in his sleep, it probably awakened him, for he generally remembered it in the morning.

On the night of the 20th and 26th of May, 1857, besides the habitual laughing fits, he had bursts of moaning and sobbing. These attacks were described to me as apparently of the same general character, but I cannot vouch for the correctness of this view, as the sobbing occurred on these two nights only, and I never witnessed it. About the same time, he was suffering from a frequent succession of severe epileptic fits, and also from spasms resembling those of tetanus.

These tetanoid spasms presented another unusual feature in his case—another rare complication of epilepsy. They occurred on May 22nd and August 5th, 1857, on the latter occasion associated with other peculiar symptoms, and on both occasions in more or less close companionship with violent epileptic attacks.

On May 20th, he had had seven violent epileptic fits. From these he had apparently recovered on the 21st; but on the morning of the 22nd I found his look heavy, and his mind dull and confused. I ordered six leeches to his temples, and three grains of calomel to be given. The blood came very freely from the leech-bites, and was still flowing, when he was seized with tonic spasms resembling those of tetanus. They affected the extensor muscles of the back, neck, arms, and hands; the back was bent, as in opisthotonos, the arms rigidly extended at his sides, and the individual fingers extended and separated from one another to the utmost. These attacks kept recurring at intervals of a few minutes, each lasting a minute or two, during which his face became congested; but he did not froth at the mouth, or bite his tongue, or lose consciousness. His consciousness seemed unimpaired. In the short intervals between these tetanoid spasms, he was excited and excessively restless. He kept crying out—"Oh dear!" "Oh dear!" "Hold me down." These words were repeated very often. He was incessantly changing his position in the bed. Sometimes he said with satisfaction "That'll do," or "That's better," when he felt easier.

After about twenty minutes, he expressed a desire to get up and walk about. He walked in a hurried and somewhat excited manner to and fro in the ward. His walk was frequently interrupted by the spasmodic bending back of his head, which brought him repeatedly to a standstill, and made it difficult for him to maintain his balance in standing. His look became anxious and alarmed, and he exclaimed to the nurse that he was sure he was going out of his mind. The walking backwards and forwards seemed to afford him some kind of relief or satisfaction; so did washing with cold water, and drinking cold water; he also took medicine eagerly, and called for more. Sometimes he threw himself on his bed, and instantly the

tonic spasms and opisthotonos ensued, whether he was lying on his back or belly; in the latter case his head and feet were raised from the bed, and all his weight rested on his belly. Sometimes his respiration became excessively panting for a few minutes.

Ammonia and valerian having been administered without relief, and more than half an hour having elapsed from the commencement of the paroxysm, I ordered—

℞ Ætheris chlorici, liq. morph. hydrochlor., ää. ʒss; mist. camphoræ ʒvij.

The tetanoid spasms then became less frequent; so after an interval of twenty-five minutes I ordered—

℞ Liq. morph. hydrochlor., ætheris chlorici, ää. ♏xx.

After this was taken, both spasms and restlessness manifestly abated. Two more doses were given, at intervals of an hour, and then good sleep was procured.

The next morning I found him quiet and comfortable, but in the evening he was seized with violent epileptic fits, and had nine of them in succession, between 8 and 11 P.M. They were followed by coma and imperfect consciousness of many hours duration. The peculiar bursts of laughter were of frequent occurrence in the course of this paroxysm of epileptic fits.

Again in August, as I have already mentioned, he had a remarkable attack.

On August 3rd, he had three complete epileptic fits. On the 4th he had one (only one) laughing attack. On the 5th he ate no dinner, saying, he had no appetite. He had no attack of any kind before 5 P.M., when he came in to tea, and the nurse observed that he looked strangely and "wild." When a cup of tea was given to him, he began to throw about the tea with his spoon, as if not aware of what he was doing. Then he left the table and laid himself on his bed, and was instantly seized with a tetanoid spasm, by which his head and heels were raised from the bed, and his weight rested wholly on his belly. This lasted for two or three minutes, and, after a few minutes more, was followed by a second similar attack. Then he began to turn round as he lay on the bed. When I saw him he was turning from right to left, but he had previously been turning in the opposite direction. He turned around his own longitudinal axis like a roller, occasionally using his hands as if to facilitate the rotation. This movement continued, with short intervals of rest, for more than an hour. He was evidently fatigued with the exertion, his respiration became panting, and his pulse frequent. He passed urine involuntarily. His face had a dull, set, abstracted expression, as if his mind were engrossed by some particular thought or feeling; but he was conscious, and generally answered my questions. Once or twice he asked the nurse to give him the medicine he had heard me order.

After the rolling movement had continued for an hour, he left his bed, and began to walk about the ward, and to turn round, standing in an upright position, like a top. This was mostly from right to left, less frequently from left to right, and at the rate of thirty-five times in a minute. It did not seem to make him giddy; when stopped for a time he did not stagger. I could restrain the rotation with a moderate degree of force, and could lead him across the ward to the window to examine his pupils, which I found sensitive to light, but as soon as he was left to himself the rotation recommenced. Now and then, but rarely, it ceased spontaneously for a minute or two. He asked frequently for drink, and once requested to be stopped in order to enable him to drink. After a time he began to belch up wind, and for a long time continued to do so frequently and loudly, after taking some peppermint-water. Now and then he had slight tonic spasms, with bending in of the back. His mental condition remained nearly the same. In answer to my inquiry, "Why do you turn round?" he replied, "I don't know, sir." He said, also, that he was not giddy, and had no pain anywhere. He expressed an expectation that he should be better soon, after he should have had more of the medicine.

This expectation was not *speedily* realised, for though he took frequently repeated doses of morphia and chloric ether, the rotation on his feet continued until 10 P.M., *i. e.* about four hours: then he went to bed, sat up in his bed, and had a rapid nodding of the head for five minutes, followed by one of his ordinary laughing attacks. To this again succeeded tetanoid extension of the whole body, which continued with but short intermissions till daybreak. During all this time he was continuing the medicine; the first two doses were taken at the interval of an hour, subsequent doses at intervals of half-an-hour, and each dose contained twenty minims of liquor morphiæ hydrochloratis, with an equal quantity of chloric ether, so that altogether he must have taken many grains of morphia. At length, about daybreak, he fell into a quiet sleep, which continued for a few hours.

At my visit at 11 A.M. he was quiet, composed, and sensible, remembered the occurrences of the previous night, but was unable to account for them, complained of giddiness, now and then eructated. His tongue was furred, and his bowels had not been moved for two days. I ordered an enema of assafœtida and other measures, but before they could be tried, he was seized with a violent epileptic fit, and to this succeeded a series of similar fits, with intervals of stupor. Eleven such fits occurred in the course of three hours, the spasms being chiefly tonic, the face intensely livid, the coma profound, and followed by much prostration. After this remarkable episode the laughing attacks recurred daily as usual; but he was free from the complete epileptic fits for a period of thirty-eight days, and then had three of them, besides thirteen laughing attacks, in twenty-four hours.

From the very beginning of his illness, his mother had observed him to appear duller, but beyond some degree of dulness, his mental faculties seemed quite unimpaired until three months after the severe and peculiar attack in August 1857. Then (the fits and laughing attacks recurring as usual) he began to grow unreasonable and self-willed, and difficult of control by his parents, with whom he was at that time living.

This was in November 1857. In the following February, while in the hospital, under Dr. Fisher's care, he was for some days delirious and violent, did not recognise his father or brother, and passed all his evacuations into the bed. From the intellectual disorder he recovered, but the change in his moral character was more lasting; instead of being a good-natured, tractable lad, as he had been before his illness, he had become, and continued to be, obstinate and self-willed. I may add, that his mother is a little hypochondriacal, and a grandfather of her's was subject to fits.

His *general* symptoms presented little that was remarkable. I was told that he had never had worms, and had never been ill before. His pulse was generally normal in strength and frequency. His tongue was sometimes a little furred; his appetite generally good, but not craving, like that of some epileptics; his bowels a little inclined to costiveness. A loaded state of stomach or bowels seemed now and then to become an exciting cause, or cause of aggravation, of his attacks. This seemed to have been the case in the attack of tetanoid spasms, rotatory movements and fits, in August 1857. But the most careful regulation of his bowels failed of effecting any considerable improvement in either laughing attacks or complete fits.

Four times in 1856 and 1857 he had seven attacks of quinsy, without obvious exciting cause. During these attacks, the laughter was generally suspended for a day or two, and as these were days of enforced abstinence, I was led to try the effect of a very restricted diet. For a time it appeared beneficial. During twelve weeks the laughing attacks were slighter, and only two complete epileptic fits occurred; but at the end of this period the apparent success came to an end, and the fits and laughter recurred as before. The effect of treatment was indeed far from satisfactory. Setons (of which he had three in succession) and nitrate of silver, prescribed by Dr. Bond, seemed beneficial, but the benefit was not permanent. When he went home in September 1857, he got beer whenever he could, and his mother reported that its effects were exceedingly prejudicial. She said that a pint of it would make him "nearly mad." He seldom attended as out-patient: the village carrier refused to convey him, because the strange laughter frightened the other passengers. The poor fellow is not naturally merry; he has rather the look of one who would be slow to understand a joke, or enter into any fun.

Remarks. With regard to the pathology of the laughing attacks, I have already intimated my opinion when I spoke of them as *minor* attacks. I cannot doubt that the laughter was truly spasmodic, that the fits of laughter were abortive epileptic fits. I think there is sufficient proof of this, even though the sense of hearing, sight, and consciousness were preserved. I think their epileptic nature is plainly indicated by their relationship to the complete fits; by their having preceded the latter by some months; by their occasional suspension for twenty-four hours before a violent fit; their greater frequency on those days on which complete epileptic fits occurred, contrasted with their infrequency on the days immediately preceding and following; their occurrence in sleep; the suddenness of their seizure and transient duration; their constituting on many

occasions the initial symptoms of a complete fit; the fact of their being, since July 1857, attended with involuntary expulsion of urine; all these reasons, together with the fact of entire absence of all mental or bodily conditions with which laughter, either natural or hysterical, is ordinarily associated, appear to be sufficient proofs that such attacks, occurring in an epileptic patient, must be regarded as themselves epileptic. If these be not conclusive proofs, we have one in the fact that, during the last few months, the laughter has invariably been preceded by an *aura*, and that an aura, precisely similar, has also preceded the complete fits. The laughing attacks are, then, in my opinion, abortive epileptic fits, analogous to attacks of spasms of the limbs, such as are observed in certain epileptics, which sometimes usher in a complete fit, while at other times they stop short of this, and proceed no further than the mere spasms of a particular set of muscles, without loss of consciousness.

As far as I know, the only case on record in which epileptic fits have assumed this laughing form is one by M. Billod (*Symptomatologie de l'Epilepsie. Annales Médico-psychologiques*, tom. ii, 1843). It was that of a patient at Bicêtre, who exhibited remarkable varieties in his attacks, in describing which M. Billod says, "At other times his attacks consisted of a convulsive laugh, or, more properly speaking, of the movements of laughter" (*contractions du rire*). From these words we may infer that the attacks resembled D. C.'s, but as no further details are given by M. Billod, we cannot be sure that the resemblance is in all points complete. A few weeks ago, meeting Dr. Brown-Séquard, I learned from him that he also had witnessed this same symptom of spasmodic laughter in an epileptic at Bicêtre. It was the only case he had known. I confess it strikes me as rather remarkable that such cases are so extremely rare. When we consider the close relations between epilepsy and hysteria, and the frequency with which hysterical convulsions are accompanied by spasmodic laughter, we might expect that a like symptom would not be rare in epilepsy; but experience shows it is otherwise. I have, indeed, observed laughter associated with epilepsy in a different way, *i. e.* not in spontaneous fits, as in D. C.'s case, but excited by *very slight* causes, the only deviation from the normal state consisting in a proclivity to laughter far greater than was natural to the patient when in health.

The following case I saw last year in consultation with Mr. Deighton. The patient was Mrs. E., aged 28, the wife of a man in the service of the railway company, in her fourth pregnancy. At my first visit she was in a deep sleep, which had followed a series of fifteen severe epileptic fits, characterised by the ordinary symptoms; full, complete insensibility, convulsions, frothing at the mouth, bitten tongue. I learned that she was subject to such attacks during her pregnancies, and that they then recurred every four or five weeks in paroxysms of numerous fits. The fits, and sleep which followed them, occupied twenty-four or thirty-six hours, and on the next day appeared the chief peculiarity of her case, which consisted in an irresistible propensity to laughter; accordingly, on our visit next day, we found her in this state. We were told that early in the morning her spirits had been depressed, but before our visit she had entered into the laughing stage. She burst into hearty laughter at the slightest word or look, and was evidently quite unable to repress it. Her expression and manner were those of a person enjoying a joke, and neither her appearance nor the laughter was hysterical in character. This excessive propensity to laughter was, I was assured by her friends, entirely foreign to her disposition when well. It was never observed except as a sequel to the epileptic fits, which occurred periodically during her pregnancies, and it lasted only for twenty-four hours. Her hair fell off in considerable quantity after each of the epileptic paroxysms. This excessive proclivity to laughter, after a succession of severe epileptic fits, is in strange contrast with the sadness, depression, and dulness, which are their ordinary consequence; but it has evidently an origin and significance wholly different from those of the spontaneous, sudden, and transient laughing fits in D. C.'s case.

In one of Maisonneuve's cases (*Recherches et Observations sur l'Epilepsie*, p. 83), a man aged 19, at the Bicêtre, who had been epileptic eight years, the fits which occurred monthly were always followed by laughing, chattering, and other signs of hilarity, which lasted half-an-hour; but in this patient, the merriment seems to have been delirious,—a symptom of the temporary mental disorder which is so frequent a consequence of an epileptic fit. So, also, when laughter occurs in ordinary mania, it is at least in most cases either the effect of some ludicrous delusion, and only so far morbid as being the product of a morbid idea, or it is merely hysterical, and has the distinctive characters of that form of spasmodic laughter. Non-hysterical spasmodic laughter (like D. C.'s) is exceedingly rare as an accompaniment of any bodily disease whatever. The cases on record are few, and of those few the majority are worthless. Take the following, by Zwinger, for a specimen. It is published in the *Acta Helvetica* for 1750, (vol. i. p. 47), under the imposing title, "*Observatio de Risu involuntario vehementi et convulsivo quem febris purpura, rubra et alba sequebatur.*" "A girl of Basle, 20 years old, of sanguine phlegmatic temperament, and in pretty good health, married a robust young man. Towards the middle of her wedding-night, suddenly and without apparent cause, she was seized with a paroxysm of excessive laughter, and again, after a few minutes sleep, she burst anew into a roar of laughter. The bridegroom in astonishment inquired the cause of so extraordinary an ebullition; but she scarcely had time to assure him that it was not the effect of anything amusing or ridiculous, when, carried away by an irresistible influence, she answered him only with fresh bursts of tumultuous and inextinguishable laughter. The bride's mother and relations were summoned to her bedside; but this only made matters worse, for her example proved infectious, and all her relatives burst into fits of laughter like mad people. Neither exhortations nor ridicule succeeded in checking the laughter of the bride; it continued in long and loud fits, while the unhappy bridegroom was weeping and in despair. It continued until the night following, when feverish symptoms supervened, then by degrees the laughter abated, and at last it ceased completely, and was replaced by a miliary eruption which overspread the whole body."

Platerus relates the case of a prior, who, in the height of a malignant fever, was seized with an inclination to laughter, which never left him until death. M. Roi has recorded a similar case, which he observed at the Charité, in Paris. Romberg (*Diseases of Nervous System*, vol. ii. p. 432: Sydenham Soc. Translation) mentions laughter as a frequent symptom during the last week of a case of fatal disease of the brain. The state of the patient had become such that consciousness was nearly extinct, and in the limbs of both sides immobility alternated with tremors and spasms. She laughed violently on the application of any stimulus. The central parts of both the cerebral hemispheres were found softened and disorganised.

The last case I shall cite is by far the most interesting and instructive. It was published by Ulrich in 1835, and is given abbreviated by Romberg (*Diseases of Nervous System*: Sydenham Soc. Transl. vol. i. p. 358). I must be content to mention only a few particulars. The patient was a young man, affected with paralysis, which, in the course of two years, gradually extended to nearly all the voluntary muscles. About seven months from the first appearance of the paralysis, he suddenly became worse. He had the greatest difficulty in moving his legs, spoke very hastily and unintelligibly, and *often laughed unintentionally*, which he had never done before. This laughing, which occurred especially during conversation but sometimes also attacked him in the street, did not leave him again, and formed the characteristic feature of his disease. Thirteen months later, during a tertian ague, the paralysis made great progress, deglutition and expectoration became more difficult, and the involuntary laughing increased. Meanwhile, the mental powers were rather increased than diminished, and the senses remained exceedingly acute. Five months later, the paralysis became more complete, and he became subject to general spasms, with a stretching of the limbs and retraction of head backwards. His speech became more unintelligible, deglutition more difficult, the involuntary laugh increased very much, and broke out whenever a movement was arrested. The spasms of the limbs became more frequent; but the patient remained calm and cheerful, enjoyed society, and liked to occupy himself with objects of art. Five months later, after another febrile paroxysm, there was complete paralysis of all the voluntary muscles. The muscles of his eyes continued to preserve their independence the longest. The patient, in his utter speechlessness, could only make himself understood by having the letters of the alphabet repeated, and winking as the letters were pronounced that composed the word required; the lower jaw hung down, the lips could not be closed, and it was with the greatest trouble that any beverage could be administered to him. Three days later he died, having preserved his consciousness up to a few hours before he ceased to breathe. Disease was found in the medulla oblongata, extending from its anterior surface to the posterior surface of the pons, and

consisting, for the most part, in a degenerated state of the pyramids and olivary bodies. The roots of the spinal accessory nerve, the hypoglossus, the vagus, and the glossopharyngeal of the right side were remarkably red; the roots of the facial, acoustic, and abducens were more coloured on the left side. The spinal cord was normal. This case seems to indicate that laughter may be excited, independently of mental conditions, by an irritation in the medulla oblongata; and a like conclusion might, not without probability, be drawn from my case of D. C., which, by the way, resembles Ulrich's, not only in the fits of laughter, but also in the tetanoid spasms. In the latter case, the expression of the face is not mentioned; we are left in doubt whether it had the merry looks of natural laughter, as in D. C.'s case. The completeness of the physical phenomena of laughter in D. C.'s attacks—its perfect resemblance to the easy laugh of natural mirth—is one of its most interesting characteristics.

We know that the respiratory movements of laughter, and the corresponding expression of the face, may be manifested independently of each other. We see this in a smile, which may be regarded as an incomplete laugh. A phlegmatic man will only smile at the joke at which an excitable person will laugh, or a smile will break into a laugh when the sense of the ludicrous grows stronger. We may see a spasmodic smile on an infant's face, excited through a reflex action by some internal irritation. We see the like appear more grimly in tetanus.

On the other hand, we observe the expiratory movements of laughing dissociated from the merry facial expression in the loud laughter of hysteria, the face reflecting rather the unhappy state of the mind, which mingles its laughter with sobs and cries.

In a smile, the exciting cause, whatever it may have been, has acted only on the facial nerves, which govern the expression of the features. In the case of hysterical laughter, the cause has acted only on the spinal nerves, which excite the expiratory muscles; and the cause, in this case, is never a ludicrous idea, as it generally is in the case of a smile or ordinary laugh.

But in D. C.'s case the muscular phenomena are complete; the expression of the face and the respiratory movements are associated in every respect as in ordinary laughter; the excitement (whatever be its origin or nature) is propagated along both the facial nerves and the spinal nerves of the expiratory muscles, and the only essential difference from ordinary laughter is in the absence of a ludicrous idea, and indeed of all mental conditions, either of thought or emotion. D. C.'s mind on these occasions seems to be entirely passive and unaffected.

This complete dissociation of all mental conditions from the movements of laughter, which are excited through the facial and spinal expiratory nerves, presents us with a kind of physiological dissection of those parts of the central nervous system which are concerned in the act of laughing. It proves that the nervous mechanism which governs these muscular contractions is complete in itself—so complete as to be capable of its full action independently of any condition of the mind. It suggests moreover, as at least probable, that this nervous mechanism (which we know must include the nuclei of the facial and certain spinal nerves) is separated completely, and at an appreciable distance, from all parts of the brain which are essentially concerned in mental acts or states. Were it otherwise, the cause which excites D. C.'s laughter must almost of necessity occasion some mental change of thought or emotion. Such an inference is not a little strengthened by the phenomena of laughter from tickling of the feet or axilla.

The dancing which accompanied the laughing fits is not undeserving of notice. It shows how natural is the association of dancing with laughter, though so rarely seen amid the formal restrictions of society. It shows also that dancing is an essentially natural act, for which a mechanism has been provided in the central nervous mass, so arranged as to be complete in itself, and independent of mental conditions.

The fits of laughter are not the only extraordinary symptoms in D. C.'s case. The paroxysms of tetanoid spasms, the rolling and turning movements, and involuntary nodding of the head, are scarcely less interesting, though somewhat less rare. They point to some part at the base of the brain as the centre at which the morbid action either originated or was reflected. It may be noticed that some similar symptoms, viz., a spasmodic stretching of the limbs and retraction of the head, are mentioned in Ulrich's case.

The rolling and turning movements may be caused in animals by injuries of various parts at the base of the encephalon, as the medulla oblongata, pons, crura cerebri and crura cerebelli, corpora quadrigemina, and optic thalami, injury of certain parts ordinarily producing rolling and others turning. But these two kinds of movement can be produced by the puncture of a single part of the encephalon. Thus in some experiments of Dr. Brown-Séquard's both these movements were produced by one injury of the medulla oblongata. The animal at first rolled, and after some seconds, instead of rolling, it turned. If, when it was turning, a slight puncture was made anew, close to the first, then the animal rolled. (*Experimental Researches*, 1853, p. 19.)

Both these movements have been several times observed in man. I need only refer to the well-known cases by Dr. Watt *Medico-Chirurgical Transactions*, vol. v.), Dr. Belhomme (Magendie, *Leçons sur le Système Nerveux*, i, 272), and M. Serres (*Journal de Physiologie*, 1823). Of the various theories which have been offered in explanation of the cause of these rotatory movements, none has ever appeared to me satisfactory, and certainly none seems adequate to account for the phenomena in D. C.'s case. Dr. Brown-Séquard's theory of convulsion of one side is at best only the least liable to objection.

The nodding movement has been far less illustrated either by experimental physiology or morbid anatomy, and we can do little more than point to Flourens' experiment of section of the anterior semicircular canal, and the very interesting cases of nodding or salaam convulsion in infants, which have been published by Mr. Newnham, Dr. Faber, Dr. Willshire, and Dr. Bidwell (see *Ranking's Abstract*, vols. ix, xi, xv, and *Lancet*, April 20, 1850). I once had under my care a boy in whom a just perceptible nodding had come on after an accidental shock to the head and neck, and was persisting as a chronic affection; and in 1846 I published in the *Edinburgh Medical and Surgical Journal*, with other cases of similar character, that of a woman who had been distressed for more than a month by a bowing movement, which had continued without intermission during all her waking hours.

The symptoms in D. C.'s case seem sufficient to justify at least a conjecture as to the part of the nervous system principally concerned in producing the various strange phenomena he has presented. Time does not allow of any detail of reasons, but looking at all the circumstances, we seem plainly directed to the medulla oblongata and parts immediately adjacent; being at the same time well aware that this is probably not the actual seat of the disease, but rather the centre through which the convulsive disorders are excited by reflex action.

When D. C. left the hospital, about two years ago, I lost sight of him until his readmission on June 16th. During that period his laughing fits never failed to recur daily, generally three or four in the twenty-four hours. About sixteen months ago, after some temporary delirium, he became free from the complete epileptic fits for a whole year.

For some months both laughing and regular fits have been invariably preceded by an aura, which, originating at a spot below the navel, proceeds directly upwards, and when it reaches his throat he instantly falls into one or other of the fits. Taking an indication from this new symptom, I am now treating him with blisters to the region from which the aura seems to proceed, and am giving thrice a day a grain of valerianate of zinc with two grains of extract of henbane. I cannot at present tell whether any permanent benefit may be expected from this treatment, but there is a remarkable change in his attacks; for, whereas the epileptic fits are not unfrequent, the laughing fits have been absent for several periods of from two to five days, an exemption which he had never before enjoyed since the beginning of his disorder.

September 3rd. Since the above notes were written, he has been free from the laughing attacks for two unusually long periods—viz., from July 2nd to July 13th; and from July 26th to the present time. On July 26th, he had four severe epileptic fits; and since that day he has had no attack of any kind, except on August 16th, an aura, which stopped short of passing into the customary laugh. The treatment during this period has been by blisters and belladonna plasters alternately to that region of the abdomen from which the aura proceeds, powders of nitrate of bismuth and magnesia, of each five grains, once or twice a day, and occasional draughts of rhubarb and magnesia.

Progress of Medical Science:

AT HOME AND ABROAD.

MIDWIFERY AND DISEASES OF WOMEN.

CANCER OF THE UTERUS.

In a clinical lecture lately delivered, M. Aran observed that, in the early stage of uterine cancer, it is important to determine whether it be deeply seated or superficial.

Deep seated cancer of the uterus, he says, is situated in the cellular tissue lying between the fibres of the organ. Whether it exists in the form of a nucleus, or in the infiltrated state, it hollows out for itself a sort of cavity, by the pushing aside of the neighbouring muscular fibres, which, as well as the mucous membrane, are generally healthy. Soon, however, new deposits take place, and the neighbouring tissues become gradually atrophied and disappear. The morbid product becomes softened, the tissues ulcerate, and at last the hardness and projections are replaced by irregular excavations with jagged edges, and bathed by a sanious fœtid fluid.

Superficial or *mucous* cancer commences with hypertrophy of the papillæ and follicles of the mucous membrane: but, while in one of the principal varieties of this form the hypertrophic condition continues throughout, constituting the *vegetating* cancer, ulceration rapidly sets in in another variety, constituting the *ulcerative* form. Cancer of the uterine mucous membrane most commonly first appears in the form of very fine mammillated projections, resembling small shot or grains of sand. These vegetations are not always indurated; on the contrary, they are sometimes remarkably soft. The epithelium is not destroyed; and in some cases it forms foliated lamellæ, separated from each other by winding furrows. In other instances, the epithelium may accumulate and form polypiform tumours, resembling cauliflower excrescences. It is in this latter variety especially that vascularity abounds, giving rise to frequent and abundant hæmorrhage which at last exhausts the patient. In other cases, ulceration seizes these tumours; they are then rapidly destroyed, and the disease assumes the ulcerated form.

The *ulcerated* cancer may be circumscribed or diffused. It is rarely primitive—at least, M. Aran has never observed it to be so; it most commonly follows the forms already described. Even in the vegetative form, when it appears to have an outward tendency, the cancer extends into the subjacent tissue by the multiplication of epithelial elements, and also determines the deposition of epithelial tumours in the subperitoneal cellular tissue or in the uterine appendages, as well as in the vagina, bladder, and rectum. When ulceration of the surface of the cancer has been established, a similar process is set up in the more deeply seated and distant deposits, and fistulous communications are established between the different organs.

These two forms of uterine cancer, M. Aran observes, do not possess the same amount of danger. Deep seated cancer is a more grave affection than the superficial form, in being less accessible to local remedies and in infecting the system more rapidly. On the other hand, superficial cancer, which is more readily recognised in its commencement, may in some cases be advantageously treated by caustics, and especially by the actual cautery. Five or six years ago, M. Aran applied the latter remedy in a case of this kind, with the result of producing a permanent cure—at least up to the present time.

M. Aran states that death, in cases of uterine cancer, occurs less frequently from cancerous infection than when other organs are similarly diseased: the most common causes of death he believes to be generally peritonitis, sometimes inflammation of the psoæ muscles, or phlegmasia alba from obliteration of the veins. In some cases also, the ureters may be compressed by the cancerous tumour, becoming dilated above the point of pressure: hydronephrosis, or distension of the kidney by urine, takes place; the urinary secretion is suppressed, and uræmic phenomena appear. This happened in a case under M. Aran's care; the patient, however, ultimately dying, in a state of exhaustion, with symptoms of phlegmasia alba. (*Gazette des Hôpitaux*, September 11 and 13.)

DEATH FROM PENETRATION OF AIR INTO THE UTERINE VEINS.

The patient was a woman, aged 24, whose pelvis and lower extremities were much deformed; the sacro-pubic diameter of the brim of the pelvis scarcely reaching three inches. M. Depaul attended her in 1855 and 1857, and on each occasion performed craniotomy. In a third pregnancy, the patient miscarried at two months and a half. She again became gravid towards November 10th, 1859; and on this occasion, M. Depaul resolved not to delay beyond seven months and a half the induction of premature labour. On the 20th of June, 1860, he administered a first injection, which occasioned a few uterine contractions. A second injection was performed on the same day; and a third on the following evening, with the apparatus in common use at the Hôpital d'Accouchement, consisting in a forcing-pump fixed to a bucket, from which the water is raised through one tube, and discharged through another, with considerable power, into the vagina. Having placed his forefinger in contact with the cervix, the operator inserted the caoutchouc cannula at a distance of about five lines from the os uteri. The injection had continued for about five minutes, when a peculiar sound was heard indicating the escape of air; the instrument was carefully examined, and being found in perfect order, the operation was resumed. After a short interval, the same sound was again noticed, and the patient complained of much pain. A third time air escaped with the water from the pipe, and the operation was interrupted. The patient having then been recommended to rise and take a few steps across the room, fell back in a faint; the pulsation of the radial artery suddenly became imperceptible, and the heart ceased to beat. During twelve minutes, no effort was spared to restore suspended animation; but after three incomplete gasps, the woman definitely expired.

The Cæsarean operation was then performed. The texture of the uterus, instead of being dark and turgid, was found pale and colourless, and at each incision air-bubbles and froth escaped with the blood. The child, which at first gave no sign of life, was restored after a hot wine and water bath, and direct insufflation, but lived fifteen hours only. On removal of the after-birth, it was found that part of its surface was detached and separated by a certain quantity of air from the uterine wall. No *post mortem* examination of the body was permitted.

Although this method of inducing premature labour is frequently resorted to by the principal accoucheurs of Paris, such an occurrence as that related above has never before been observed. The instrument has since been the object of careful examination, but the most minute research has failed to detect the imperfection to which the fatal escape of air was due. M. Depaul assumes that the air forced into the womb was retained within its cavity during the contractions, at the close of each of which it was aspirated by the uterine veins, whence it passed into the cava and into the heart—a direction in which it was further propelled by the *vis a tergo* exerted by the uninterrupted discharge of water into the vagina.

A somewhat similar case is referred to in a lecture by Dr. J. C. Dalton, jun., of New York, published in the *American Medical Monthly* for June 1860. Speaking of the entry of air into the veins, he proceeds to comment on the alleged entry of air by the veins of the uterus after parturition, and, after noticing the observations on the subject of Drs. Cormack, Meigs, Lever, Simpson, etc., he says:—

"On looking over the whole history of this subject, I must acknowledge that it appears exceedingly doubtful whether such an accident ever actually happened in the human subject. I am not aware that there is a single case on record in which the evidence was conclusive. In most of the cases there was, at the same time, more or less hæmorrhage, to which the death might be attributed. In many of them there was no *post mortem* examination. In some, air was found in the veins of the uterus and abdomen; but in none of them was the frothy mixture of blood and air found in the right cavities of the heart, which can alone show conclusively that the introduction of the air took place during life. On the whole, therefore, it is very uncertain whether such a spontaneous introduction of air, after delivery, has ever been the cause of death in the human female.

"A very remarkable case, however, occurred at Albany, in this state, a few months ago, in which it seems certain that air was really introduced into the uterine veins, though by a very different mechanism from that suggested by Dr. Simpson. The

case happened under the observation of Dr. John Swinburne, who published an account of it in the Philadelphia *Medical and Surgical Reporter* for April 23rd, 1859. The patient in this instance was an unmarried woman, who was residing at the house of an abortionist (also a female), for the purpose of having a miscarriage induced. An attempt was made to rupture the membranes, by introducing into the uterus a gutta-percha catheter; and, according to the account given by the woman, no sooner was it introduced into the uterus, than the patient fell back, as she supposed, in a fainting fit. Finding that the fainting fit did not pass off, the woman became alarmed and sent for a doctor, who immediately repaired to the house and found that the patient was dead.

"Dr. Swinburne, next day, made an examination of the body, and found that the sinues of the uterus, the jugular veins, and even the superficial veins of the body, contained air. The right cavities of the heart were 'distended with a spumous mixture of blood and air.' The uterus contained a healthy, five-months fœtus. The membranes were unbroken, but were separated from the uterine wall externally, on the right side, together with a portion of the placenta; and there was a perforation at this spot, leading into the uterine sinuses, about two inches distant from the cervix.

"The air found in these vessels could not have been the result of decomposition, since the affair happened in the month of March, and the autopsy was made fourteen hours after death.

"Dr. Swinburne expresses the opinion, that in this case the air was forcibly *blown in* through the catheter, with the intention of producing separation of the membranes. The membranes being partially separated in this way, and the uterine veins passing to the placenta, being opened, but not quite torn across, air might readily be forced into the veins by insufflation, and might so produce instantaneous death. Or, the end of the instrument may have penetrated one of the uterine sinuses, and thus may have introduced the air directly into the vascular system."

ANATOMY AND PHYSIOLOGY.

DENTITION IN OLD AGE.

M. Carre recently related the following curious case at a meeting of the Société de Biologie in Paris.

Madame X., aged 85, of remarkably good health, in January 1859 felt a pain in the upper jaw, which she attributed to scalding herself with hot soup. The burning pain continued, with a little swelling, for a week, when, to her surprise, a tooth appeared. This was the left upper canine; it grew rapidly, and at the time of the report was of normal form and dimension, and was firmly implanted in the alveolus. Two months afterwards, the same symptoms presented themselves, and were followed by the evolution of the second incisor on the left side in the upper jaw. This tooth is small and solid, and presents some asperities. Some months subsequently, the first bicuspid in the lower jaw on the right side appeared; and, in January last, the corresponding tooth on the upper jaw. Of these two, the former has scarcely grown beyond the gum, and is irregular on its surface; the latter is almost of normal size. With the exception of these teeth, Madame X. is edentutous; and the gums present the appearance usual in this condition. She cannot remember any facts indicating irregularity in her early dentition. She began to lose her teeth, without pain, at the age of 50. Her hair is but partially grey; it is mostly blond, and long. Her sight and hearing are perfect: the nails have a remarkable tendency to rapid growth.

The reciter of this case refers to several other instances of dentition in old persons, related by Ysabeau, Fauchart, Bohmer, Hoffmann, and Bartholin; the age in one instance being said to be 120 years. (*Gazette Médicale de Paris*, September 15th, 1860.)

REGENERATION OF NERVES.

MM. Philipeaux and Vulpian have lately been engaged in an interesting series of researches on the regeneration of nerves after injury. The following is an analysis of the conclusions at which they have arrived.

It is well known that, when a nerve is completely divided, the peripheral portion loses its properties, and undergoes a well marked change of structure. Physiologists have held that this anatomical change, and the loss of its properties, are permanent so long as the cut ends do not become united. MM. Philipeaux and Vulpian, however, have found by experiment that this opinion requires an entire modification; for they have found that the peripheral portion of a nerve, after having been completely separated by simple section or by excision of a portion, may, after having undergone complete change, recover its physiological property and its normal structure more or less completely, without any previous union taking place between the ends. They hence conclude that—

1. The maintenance of the normal structure of nerves is not so necessary as has been supposed to their intimate connexion with the nervous centres.

2. Motor force (and, by induction, sensation) are not borrowed forces, derived by the nerves from the central nervous system, but are rather properties of tissue, dependent on the integrity of the nutrition and structure of the nervous tubes.

MM. Philipeaux and Vulpian have also made experiments on the union of nerves of different origin and structure, as well as on recurrent sensibility. After section of a motor nerve, they have always found some healthy tubes among those which had undergone alteration; and they believe that these healthy tubes are sensitive, derived from a nerve of sensation, which has joined the motor nerve at a point more or less distant from its periphery. It is from these sensitive tubes, they believe, that the recurrent sensation in motor nerves is derived. (*Gazette Hebdomadaire*, September 14th, 1860.)

ACTION OF NICOTINE ON THE HEART.

Nicotine, M. Rouget observes, is regarded as possessing in the highest degree the property of rapidly destroying muscular irritability. The action of this poison on the heart presents a remarkable exception to this opinion.

In frogs killed by the application of a drop of solution of nicotine to the eye or under the skin, the beatings of the heart continue long after all trace of irritability has disappeared in the muscles of locomotion. When the action of the heart has become feeble and the intervals between the beats increased, the direct application of nicotine instantly revives the contractions: these are at first notably increased in intensity, and at last become permanent, leaving the ventricle in a state of tonic spasm, with its cavity completely effaced.

In birds and mammalia killed by the inhalation of chloroform, the ventricles remain fixed in the state of diastole; the right auricle alone manifests some feeble tremulous movements. If the ventricles be pricked or galvanised, no result is produced, or only some feeble and entirely local contractions take place. But, in this state, the contact of a drop of concentrated solution of nicotine produces general contraction, energetic response to the stimulus of pricking or the electric current, and finally permanent contraction. (*Journal de la Physiologie*, July 1860.)

THE ABSORPTION OF THE CALORIC RAYS OF LIGHT IN THE EYE.

On this subject, M. J. Janssen has made a series of experiments, and presented his results in a *Memoir* to the *Academie des Sciences*. The author extended his researches to the following points:—

1. To determine the quantity of caloric which reaches the retina of the eyes of various animals and from various sources. 2. To determine the relative proportion of caloric absorbed by each of the various media of the eye. 3. The study of the mode of action of the various media of the eye upon caloric.

The following are M. Janssen's conclusions:—

1. In the higher animals the media of the eye, which transmit light perfectly, possess, on the other hand, the property of absorbing completely the rays of caloric, thus effecting a most decided separation of these two kinds of radiation.

2. In a physiological point of view, this property of the media of the eye appears important, when we consider that in our best sources of artificial light the calorific intensity of the dark radiations is double that of the luminous radiations.

3. These dark radiations are generally absorbed with extreme rapidity in the anterior media of the eye; the cornea absorbs two-thirds and the aqueous humour the other third.

4. This quality of the media of the eye is entirely owing to their aqueous nature; their power of absorbing caloric is identical with that of water.

5. Finally, another conclusion appears natural in reference to our artificial sources of light; must they not be considered to be very imperfect as yet, because, even in the best among them, there is such a great disproportion between the useful rays and those foreign to the phenomenon of vision?

Reviews and Notices.

Application of the Button-Suture to the Treatment of Varicose Dilatation of Veins. By Nathan Bozeman, M.D. Pp. 8. New Orleans: 1860.

In this little pamphlet, Dr. Bozeman describes a method of treating varicose veins by the *button-suture;* and relates three cases in illustration. Of these, one, a negress aged 50, left his care apparently cured, but there is no subsequent history of her progress; the second, a coloured woman aged 34, remained well at the end of seven months; and in the third, a lad aged 19, the result had continued to be satisfactory at the end of three months.

The process which Dr. Bozeman employs is the following. Five or six pieces of silver ligature are introduced under the vein at suitable points: in doing this, Dr. Bozeman prefers that the patient should be in the erect position, as the vein is distended, and the needle can be entered and carried round it more easily. Then, the patient being made to lie down, in order that the vein may be emptied as much as possible before tightening the ligatures, the two ends of each wire, commencing with the lowest, are put through the hole of the suture-adjuster; these being firmly held between the fore-finger and thumb of the left hand, the instrument is slid down upon them until complete constriction of the vein is effected. A disk of lead, with a hole through its centre, is then put on the wires and slid down: on this a shot is also slid down. This being grasped by forceps and held firmly against the plate of lead, the requisite force for the constriction of the vein is applied by the ligature, and secured by compressing the shot upon it. The ends of the wire are then cut off close to the shot; and the operation is completed. The sutures are removed about the eighth or ninth day.

Dr. Bozeman has also applied the button-suture treatment with success in a case of varicocele; elongation of the scrotum, which accompanied the disease, being remedied by excision after consolidation of the veins had taken place. The patient remained well at the end of eight months.

The advantages of the button-suture in the treatment of varicose conditions of the veins are thus summed up by Dr. Bozeman:

"1. The innocuousness of the silver wire; 2. The protection afforded by the button against undue pressure upon the skin in front of the vein; 3. The facility of adjusting the apparatus, and the great power given the surgeon over the vein, without risk of the wire breaking, as by tying; 4. The certainty with which the vein or veins can be cut in two, and their occlusion effected, with evidently less risk of the dangers in the usual modes of operation."

We think that the adaptation of the button-suture to the treatment of varicose veins is worthy of a trial in this country.

The Wife's Domain. By Philothalos. Pp. 162. London: Churchill. 1860.

This is a popular work, consisting, we are informed, of portions of a series of discourses delivered from time to time to poor women at a small hospital for the diseases of children and women. Under the four headings of the Young Couple, the Mother, the Nurse, and the Nursling, some very good advice is given, in plain language, in regard to the preservation of moral and physical health. The author also describes in outline the principal diseases to which pregnant and parturient women, and children, are subject; and generally insists on the benefit of calling medical aid in cases of deviation from health. Altogether, the book is one which we can recommend.

LETTERS AND COMMUNICATIONS.

Letters or communications for the Journal should be addressed to Dr. Wynter, Coleherne Court, Old Brompton, S.W.

Letters regarding the business department of the Journal, and corrected proofs, should be sent to 37, Great Queen Street, Lincoln's Inn Fields, W.C.

British Medical Journal.

SATURDAY, SEPTEMBER 22nd, 1860.

THE DIARRHŒAL DISTRICTS OF ENGLAND.

The Report issued by the Privy Council respecting the public health in 1859, contains some very interesting particulars from the pen of Mr. Simon, under the title of "The Diarrhœal Districts of England". The public have heard of the "hop districts", and the "corn districts"; but we apprehend it will be taken by surprise by such a term as the "diarrhœal districts", not for one moment imagining that there are great towns in which this disease is permanently established. Dr. Greenhow, who has been for a long time employed by the Board of Health Department in a series of most valuable inquiries relative to the sanitary condition of the public, has lately been engaged in visiting eight of the large manufacturing towns—Coventry, Manchester and Salford, Nottingham, Birmingham, Dudley, Leeds, Wolverhampton, and Merthyr Tydfil—in which diarrhœa is known to be endemic; and these, in comparison with two rural districts situated north and south, show a condition of things which is really worthy of the attention of the State. Whilst the rural districts—and these by no means "model" districts—show an annual average death-rate of only 20 in 100,000 of the population, the eight towns show an average annual mortality some three to nine times as great. This is a great fact; and the Board of Health, under the superintendence of its Health Officer, is worthy of all commendation for the pertinacity with which it has traced the causes of this urban mortality, so very much of which is preventable. Dr. Greenhow, in his Report, has shewn that diarrhœa is the constant companion of spots contaminated with night-soil, and supplied with impure water. Speaking of Birmingham, he says:—

"Not only has diarrhœa most prevailed, and proved most fatal, in streets where these causes of atmospheric impurity existed, but, as has been shown in the history of particular streets and courts, it has selected as its victims persons much exposed to these causes, to the comparative exclusion of others."

It appears that a very large proportion of the deaths from diarrhœa in manufacturing towns are those of infants under one year old; and we think the Report is perfectly justified in placing the responsibility of a large portion of this infant mortality upon the factory system. The system of employing large sections of the adult female population in mills revolutionises their homes, divorcing the maternal parent from the offspring she should nourish, substituting, in place of natural food, sustenance often of the most indigestible character, the effects of which the "quietner" is called in to calm. We have no need to search for untrapped drains as long as nature is thus deliberately outraged; and we think Mr. Simon has by

this Report thrown a responsibility on the great manufacturers which their good feeling will lead them to discharge. It is in vain that we protect the tender limbs of the young children by a factory law, if we permit, nay necessitate, by our factory arrangements, a neglect of infant life which leads to such a fearful mortality, and, even when it does not kill, cannot fail to entail feebleness upon the rising generation. Granted that female labour cannot be dispensed with, is there no plan by which infants can be located near their mothers, if the mothers cannot leave their work except at long intervals? Would it be impossible to provide rooms in the mills easily accessible to the mothers? We speak in the name not only of the infants, but of the whole of the females of such households as are thus deprived of their domestic head. What can the life of a mill hand be like, whose wife is all day absent? What becomes of the children? If we take away for the purpose of labour the mainspring of the household, ought we not to provide in some manner for the manifold evils we thereby inaugurate? What is to prevent the establishment of rooms in the great factories where, at a cheap rate, the meals of the married factory hands may be provided, and where the infants may from time to time be suckled?

That we cannot go on slaughtering the innocents at a rate nine times higher, in some instances, than there is any necessity for, is obvious. This is a matter that lies at the root of the vigour of the rising generation of English men and women in all the great centres of industry; for, in our opinion, the question of how many infants we deliberately kill by a want of breast-milk is greatly inferior to that of how many we condemn to a miserably rickety existence from the same cause. However much we may congratulate ourselves on the prosperity of our great staple manufactures, we cannot conceal from ourselves the fact that a prosperity tainted at its very source, as this is, by a degradation of the race, is a fallacious prosperity, which must sooner or later bring us to grief. We know that the will is not wanting in the majority of our millocrats to remedy the evils that have grown up among their hands as a consequence of the vast extension of the factory system; and we trust Mr. Simon's assurance that "the evil may be averted, or at least greatly mitigated, by arrangements which the labouring classes themselves have not the power of organising", will not fall on unheeding ears.

AERIAL PLAYGROUNDS.

Mr. Slaney's efforts to procure cheap playgrounds for the children of the working classes of this great metropolis has, we know, failed. The increasing value of land acted as a most effectual check to his efforts in carrying out his laudable scheme. A good idea, however, although it may fail for a time, is sure eventually to fall upon good ground and to bear fruit. That his idea is a good one, who can doubt that is accustomed to watch the blanched cheeks and the miserably stunted appearance of the crowds of children inhabiting metropolitan crowded courts? We find that oxygen is all that is wanting to lift them out of their wretched physical condition; but oxygen, or rather oxygen space, if it is to be purchased at the price at which many of our building sites is estimated, even in third-rate neighbourhoods, is a luxury we dare not hope to obtain for them. It has suggested itself, however, to the architects of a few of our parochial schools, that if playgrounds cannot be obtained in open spaces, they may at least be constructed on the uppermost storeys of buildings dedicated to parish purposes. The parochial school of St. Giles' parish has been constructed with a sanitarium of this kind; and now the parish children have a playground provided for them of a considerable size, at a height which insures very much purer air than can be found at a lower level. We recommend this ingenious method of lifting poor children into a good atmosphere to the attention of all large and crowded cities where playgrounds in other forms are not easily obtainable.

THE WEEK.

The following letter, urging the necessity of putting into operation the Act for the Prevention of Adulteration of Food, has been addressed to the Mayor of Birmingham, by Mr. Postgate:—

"59, Bristol Road, Birmingham, August 24th, 1860.

"Dear Sir,—The melancholy cases of poisoning which have occurred in this district from the practice of adulteration, the facts brought out in evidence before the Committee presided over by Mr. W. Scholefield, and the public testing of commodities purchased in the town by myself at town's meetings convened by previous mayors, prove the necessity that exists for bringing into immediate operation the Act for the Prevention of the Adulteration of Articles of Food or Drink, and for enforcing the law.

"As is well known, this agitation had its rise in Birmingham; and that my object in commencing it, and in carrying it on in conjunction with Mr. Scholefield, was to benefit the public by suppressing a system fraught with insidious danger, and at the same time free the fair and honourable trader from the dishonest and dishonourable competition such a nefarious system as adulteration engenders and supports. It was a source of gratification, six years ago, to find that I suggested a scheme for the suppression of adulteration which met with the approval of Mr. Scholefield—a scheme unanimously adopted at the town's meetings referred to, and now forming the base of the Act of Parliament I left with you yesterday.

"I mention these matters, because I have observed a disposition to filch credit from Birmingham by taking it from the originator and workers of this question.

"An efficient remedy having now been provided by the legislature for the people, it remains for the people's local representatives to put it in force. I therefore, having called your attention, as chief of that body, to the law, respectfully leave the matter in your hands.

"I remain, dear sir, yours faithfully,

"John Postgate.

"Thomas Lloyd, Esq., Mayor of Birmingham."

Mr. Wharton Jones has been lately endeavouring to devise a means of deriving stereoscopic effects from single pictures; that is to say, of producing an appearance of relief similar to that observed in viewing the double picture in the ordinary way through the stereoscope. According to a pamphlet lately published by him, he has to a great extent succeeded, by means of plano-convex glasses. In the convex side, the curve in a horizontal section is somewhat of a cycloid, or it may be described as a circular curve running into a tangent: in a vertical section, the curve is parabolical or circular. These lenses may be mounted in the eye-piece of a binocular opera or field-glass, a little in front of the concave eye-glass. The stereoscopic effect produced is slight in comparison with that which attends the use of the stereoscope with a double picture: but it must be remembered that, in the latter case, the appearance of relief is generally much exaggerated beyond anything that can exist in nature.

Association Intelligence.

THIRD LIST OF SUBSCRIPTIONS.

Dr. Williams will feel obliged if the Honorary Secretaries will forward any subscriptions they may have in hand, either to Sir Charles Hastings or himself, not later than the 29th inst., so that they may be published in the Journal.

Worcester, September 4th, 1860.

SOUTH-EASTERN BRANCH:

ROCHESTER, MAIDSTONE, GRAVESEND, AND DARTFORD DISTRICT MEETINGS.

The first meeting for the present session will be held at the Bull Inn, Dartford, on Friday, September 28th, at 3.45 P.M. Dinner (punctually at 5.30 P.M.) will be prepared for those who may be able to remain.

Trains will leave Dartford for Rochester, Maidstone, and Sittingbourne, at 8 P.M., and for London at 8.40.

Gentlemen intending to dine, are requested to give an intimation thereof on or before Wednesday, Sept. 26th, to Mr. Culhane of Dartford, Dr. Spurrell of Bexley Heath, or to

James Dulvey, *Honorary Secretary.*

Brompton, Chatham, September 1860.

Reports of Societies.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Physiological Subsection.

ON THE NATURE OF DEATH FROM THE ADMINISTRATION OF ANÆSTHETICS, ESPECIALLY CHLOROFORM AND ETHER, AS OBSERVED IN HOSPITALS. BY CHARLES KIDD, M.D.

From data already collected and tabulated, it appeared not difficult to explain and to offer some new directions as to the nature of death from anæsthetics, a subject of serious importance in medical practice: and the author having collected and tabulated 109 deaths from chloroform and 24 from ether (including 2 from amylene) believes himself in a position to give an explanation of these accidents.

Of these 133 deaths, 90 occurred in male patients; and about half, or 43, were females, though anæsthetics have been largely used in midwifery practice. Accidents in children, too, have been almost unknown, though chloroform has been used in such cases very extensively; this immunity from danger in diseases of children and women being very marked.

There have been already about from 250,000 to 300,000 operations of various kinds performed under the influence of anæsthetics, chiefly under chloroform, including every variety of serious surgical accident; several hundreds of the patients had been, for such very serious operations as resections of joints, large amputations, ovariotomy and other female cases, ligature of large arteries, etc., more than an hour fully anæsthetised; yet in this large mass of serious surgical operations, there had not been any well attested instance of death from stoppage of the functions of life, or narcotism of the system by the chloroform. On the contrary, fully 80 per cent. of the deaths, and nearly all the deaths from chloroform, had occurred in trivial operations, from very small doses, *suddenly* before the anæsthetic had produced its full effect. It was not sought to be argued (though not very clearly established) that death in the human subject might not be produced by long continued inhalation of chloroform; it seemed only established that this was not at all the mode in which death had been observed to occur in hospital practice.

The author suspected that, anæsthesia once established in a favourable subject, respiratory action was diminished, and that inhalation or normal respiration continued on a diminished scale also, almost after the manner of hybernation in warm-blooded animals; but, respiration once disturbed, attended by spasm of the glottis through the recurrent laryngeal nerves, especially in strong healthy but nervous subjects, for trivial operations, as tooth-drawing, whitlow, strabismus, caustic to warts, etc., death might occur, and usually had occurred, from a few drops of chloroform. Nevertheless, a law of tolerance of chloroform had been long established in hospitals, that where a patient was labouring under old disease, pain of a neuralgic kind, etc., he bore chloroform best; patients with long continued stertor had taken thus a pint of chloroform in well regulated doses at a single inhalation; one lady had sixty-two ounces in twelve days for intense pain, with good effect; another, two hundred ounces in six months, also with beneficial result!

The best mode of examining the statistics for future use, according to Dr. Kidd, was twofold: first, inductively; and then by comparing certain large groups of facts loosely one with another, and forming other conclusions deductively for application in every day practice.

Single positive instances, the author thought, did mischief logically in a subject so essentially deductive, as the examination of groups of facts connected with anæsthetics. A single instance in a purely physical science will determine the fixed atomic relations of a salt or oxide, or the diagonal of two forces, or measurements of angles, tangents, or equations, etc.; but in disease and discussions on disease, the single facts are, though positive, so varying and exceptional, the disturbing forces in disease so active and numerous, that we must have recourse to groups of similar facts, or facts tending in a particular direction (statistics), and see how we may reason from what is known to what is still dubious or unknown.

It seemed well established that excitation of certain parts of the excito-motor apparatus in the nervous system, produced contraction or spasm of distant parts, such as bloodvessels, muscles, etc.; thus there are spasms of the parts of the neck, laryngismus, trachelismus, spasm of the glottis, and in actual practice under chloroform these are more to be feared than deep insensibility with stertor.

As to the somewhat casual or accidental nature of some of the deaths from chloroform, there was every year additional proof. Of 45 deaths collected by Dr. Snow, he believed five or six were from fright on the operating-table. Chloroform, it might be remembered, has now to bear the obloquy of all the preliminary mischief in operations formerly placed to the account of something else. It was curious that nearly all the deaths happened before operations, and seldom, indeed never, as the result of a long tedious operation. In 85 deaths classified, 17 were operations for hæmorrhoids, fistulæ, etc.; 14 were operations for removal of toe-nail, necrosed finger-bone, etc.; 10 were cases of tooth-extraction; 11 were operations for removal of tumours and such like; 9 were deaths in minor amputations; 6 were strabismus operations, cysts of eyelids, etc.; 9 were operations on the testis; 5 were reduction of dislocations; 1 was hernia; and 5 were delirium tremens. The broad general fact that, in 300,000 operations of all kinds, chloroform had decidedly saved 6 to 10 per cent. of lives, also tended to show that the cause of death was of a casual nature.

Looking broadly at the facts, it was found by the author that the deaths from chloroform were all sudden, and many of the nature of "fit". Chloroform has a powerful irritant action on the pneumogastric in the lung; and a like irritation by electricity, as now known, stops the action of the heart. Hence syncope may possibly occur, if this irritation or spasm of the pneumogastric and laryngeal nerves be reflected to the heart.

Chloroform, as a general fact, had had a good effect on the general result of operations in surgery. Where it has acted badly, as shown by statistics, it has probably been from a tendency of patients themselves to put off surgical operations too long, changing primary into bad secondary operations. Probably 10 per cent. of lives are still directly saved by chloroform yearly (comparing the present surgical death-rates and those in existence immediately prior to the discovery of anæsthetics in 1846). This showed, according to the author, that the cause of deaths from chloroform must be also of a casual or accidental nature, rather than as arising *ex necessitate rei.* A large number (one-fourth) of the patients also in whom death had occurred had taken chloroform before with perfect safety; one patient, a hundred times. This also corroborated the view that the cause of death is more of a casual nature than due to idiosyncrasy or the general tendency of anæsthetics.

This fact of deaths from chloroform occurring in trivial operations, and early in the administration, or in the stage of excitement, had been remarked by all the chief observers—M. Robert of Paris, M. Denonvilliers, Mr. Paget, Dr. Snow, etc. It was believed to be due to diseased heart; but this opinion had not been borne out by any group of facts; while there was the larger negative clinical fact that hundreds of surgical patients with diseased heart have had chloroform with entire

safety; and that, in by far the largest number of cases of death, the heart was healthy, and the symptoms were referrible to the brain. Thus, in 18 deaths, the only instances where *post mortem* or other examination has shown any lesion, 5 deaths were the result of delirium tremens; 8 had cysts in the brain, meningitis, etc.; 2 had chorea; and there were only 3 where traces of diseased heart were suspected or found. Then, of 45 deaths collected by Dr. Snow, he believed 6 were from fright or emotional depression on the operating-table, evinced by intense nervousness; while, as regards the 24 deaths from ether, they seem to have occurred from extreme muscular relaxation, exhaustion, and hæmorrhage, favoured by this condition, after, not before, operations.

There had been probably twice as many patients saved from impending death by chloroform by proper restoratives, as the number that have succumbed to its influence. All these restoratives have been directed to excite the brain and reflex system of nerves; and it is to be feared some patients were lost by venesection, used on the theory of fatty or obstructed heart. The author had found that intoxication, or delirium tremens, and hysteria, strongly contraindicate the use of chloroform; and a fact of a very curious kind, belonging to the same category, had been somewhat recently dwelt on in the battles of the Crimea, in India, at Solferino, etc., that all nervous frightened prisoners are acted on with much difficulty, and not without danger, by chloroform; excess of emotion acting like excess of sensation, necessitating very large doses of anæsthetics—a state of "exaltation of sensibility" not very far removed from that which causes spasm of the glottis, trachelismus, etc., in fatal cases. As to delirium tremens, Dr. Snow does not seem to have suspected it; but of 45 deaths, the author collected (independent of suicide cases, all through these researches omitted), he finds 9 cases probably due to intoxication or delirium tremens, though some were put down to other affections or surgical operations.

In ten cases very carefully described by accurate observers, in four there was evident sign of the heart still beating, though the respiration had ceased—one by Langenbeck; one by Mouatt in the Crimea, the single case of accident there ("death from removal of finger; patient became violent; spasm of larynx occurred; heart's action continued even after pulse and respiration"); and two others; so that it is not impossible that, if this phenomenon were watched, it would be detected more often. It appeared to the author, indeed, that we should never be safe in chloroform administration, if the heart, as he believes it to be, were not one of the *very last parts*, if not the last, to be depressed by chloroform; he rather feared implication of the respiratory tract, in the laryngeal nerves, *nœud vitale*, pneumogastrics, etc., and a disturbance of their delicate balance.

The chief conclusions arrived at were—

1. There is little, if any, benefit in choosing ether in preference to chloroform, as an anæsthetic. In "ether mixtures", the ether is first inhaled pure. Ether is to be especially avoided where we have excessive hæmorrhage or muscular relaxation to fear; though in such cases as reduction of dislocations, and in midwifery, it has some points in its favour, but not in the shape of mixture with chloroform.

2. There is less cause of apprehension in administration of anæsthetics in the cases of children and females, and in serious surgical operations, provided the anæsthetic is administered skilfully, than in the cases of men of robust frame, especially if given to intoxicated habits, or the operation be connected with tendinous parts, so often followed by syncope without chloroform.

3. All hospital experience tends to corroborate the view that there is a very remarkable "law of tolerance" of chloroform observable in all bad surgical cases. Once the conjunctiva of the eyelids is insensible, the eyelids closed and normal, anæsthesia kept up with ordinary skill, there is a period of safety, with diminution of respiratory action, established almost like hybernation, but which leaves the heart unaffected. That this, rather than a single instance of death from diseased valves and chloroform; that this, seen in tens of thousands of cases, should encourage the most hopeful views on the diffusion of anæsthetics.

4. Idiosyncrasy has probably very little to do with these accidents, if we omit intoxicated habits, hysteria, tendency to "fits", etc.; so that "trials d'essai", so common hitherto, or placing a patient under several doses of chloroform on previous days to a surgical operation, is a mistake. A patient may have chloroform a hundred times, but die of its effects as surely on the next or hundred and first.

5. There are evidently two modes in which our common anæsthetics may cause death, which require watching; ether, at some distant but uncertain interval during the first twenty-four hours after a surgical operation; but chloroform, like lightning, in an instant, if the inhalation be not stopped. Probably in one-half of the latter cases, at least, the heart, as in asphyxia, is still beating; the action being more like an irritant one on the laryngeal recurrent, and pneumogastric nerves; the other cases are instances of syncope, of convulsive fits, etc.

6. In several cases of death—as in delirium tremens cases, to wit—death occurs because ordinary restoratives do not act, as we have an imperfect reflex and nervous system to work with; but, in all cases of impending death, we are justified in at once having recourse to such means, viz., artificial respiration by pressure, as it acts also on the cavities of the heart; tracheotomy, if we have to fear this form of spasm or asphyxia (the engagement of the double respiratory centre of the pneumogastric being very puzzling under chloroform, but rather of the nature of spasm); sudden cold dashing of water, to wake up the respiratory nerves; fresh air fanned on the face, etc.; too much not to be done at first, as the spasm may subside. Acupuncture of the muscles of the neck is also recommended, so as to irritate the spinal accessory, and phrenic, but not the eighth pair of nerves.

7. Hitherto our experience of this spasmodic irritant condition, and our experience of oxygen gas, galvanism, etc., as restoratives, have not been encouraging; these agents being too irritating, and requiring very exquisite skill to apply them, especially galvanism, which hitherto has only, it is to be feared, done mischief. A better restorative seems to be the injection of warm wine into the rectum, or, as tried in animals poisoned by chloroform, transfusion of any simple saline fluid into the veins, as in the analogous collapse of cholera.

[This abstract was not received until within the present week. Editor.]

Medical News.

BIRTHS, MARRIAGES, DEATHS, AND APPOINTMENTS.

** In these lists, an asterisk is prefixed to the names of Members of the Association.*

BIRTHS.

Of sons, the wives of—

Genet, Frederick J., Esq., Surgeon, Brompton, on Sept. 16.

*Metford, J. Seymour, Esq., Clifton, on September 17.

Of a daughter, the wife of—

Hunt, John, Esq., Surgeon, Tachbrook Street, on Sept. 12.

MARRIAGES.

*FitzPatrick, William H., Esq., of Knotty Ash, Liverpool, to Harriet, only child of the late John W. Mulleneux, Esq., of Liverpool, at Folkestone, on September 13.

Keate, Robert W., Esq., Governor of Trinidad, to Henrietta J., daughter of Thomas Murray, Esq., of Woodbrook, in the same island, at St. Saviour's, Paddington, on September 11.

Morgan, Howel, Esq., Surgeon, to Ann, second daughter of the late Hugh Jones, Esq., of Hengwrcucha, Merionethshire, at Llanfechreth, North Wales, on September 13.

*Ramsden, Walter Henry, Esq., L.R.C.P., Park House, Royston, to Catherine, youngest daughter of the late John Kaye, Esq., of Prestwich, on September 12.

DEATHS.

Goddard. On June 26th, at Brisbane, Australia, aged 22, Leonard, eldest son of L. M. Goddard, Esq., Surgeon, of Clerkenwell.

Magrath, Nicholas, M.D., Surgeon Royal Navy, at Guernsey, aged 57, on September 10.

APPOINTMENTS.

Maunder, C. F., Esq., elected Assistant-Surgeon to the London Hospital.

PASS LISTS.

Apothecaries' Hall. Licentiates admitted on *Thursday, September 13th*, 1860:—

Bennett, Charles Henry, College House, Hammersmith

The following gentlemen also, on the same day, passed their first examination:—

Beck, William R., Great Russell Street

Holman, Henry, Crediton, Devon

Social Science Congress at Glasgow. As the day approaches for the commencement of the present year's congress of the members of the Social Science Association, the 24th inst., at Glasgow, public interest increases, as is shown by the numerous applications for members' and associates' admission tickets. The Right Hon. Lord Brougham will preside; the Hon. the Lord Provost of Glasgow, Sir Archibald Alison, Bart., D.C.L., Sheriff of Lanarkshire, and the Very Rev. Principal Barclay, D.D., will officiate as vice-presidents; and the Lord Advocate, Sir James Kay Shuttleworth, Bart., the Hon. Arthur Kinnaird, M.P., Viscount Ebrington, and Sir James Emerson Tennent, are the presidents of departments. The order of proceedings has been published, and throughout they seem most satisfactory. On Monday, at two o'clock, the proceedings will be appropriately inaugurated by a service in the cathedral, when the Rev. Dr. Robertson will preach. At five P.M., a dinner party will meet, by invitation of the Lord Provost, in the Corporation Galleries, to which the most eminent men of the time have been invited. At eight P.M., on Monday, the opening address will be delivered in the City Hall by the president. The proceedings of the four succeeding days will be commenced by general addresses to members and associates by the presidents of departments. On Tuesday morning, the Lord Advocate, the president of the Jurisprudence and Amendment of the Law Department, will deliver an address in the common hall of the university, after which the several departments will commence business. The same evening, a conversazione of members and associates will be held, by invitation of the Lord Provost and corporation, in the M'Lellan Galleries. On Wednesday, Sir James Kay Shuttleworth, president of the Education Department, will deliver an address in the Common Hall; and the same night, a great meeting of working men will be held in the City Hall, at which Lord Brougham will preside, and deliver an address. Other noblemen and gentlemen will also address the meeting. The members and associates will promenade that evening in the Corporation Galleries. Thursday's proceedings will be commenced by an address by the Hon. Arthur Kinnaird, M.P., president of the Punishment and Reformation Department; and in the evening, a conversazione, on the invitation of the association, will take place in the Queen's Rooms. Sir James Emerson Tennent, president of the Social Economy Department, will give an address on Friday morning; and in the afternoon, a public dinner will take place in the City Hall, at which ladies as well as gentlemen will be present. The concluding meeting, which will take place on Saturday, will be chiefly devoted to transacting the business of the association.

Mortality of the Blind. At the meeting of the Association for the Advancement of Science, Dr. Elliott presented interesting statistics on the mortality of the blind. From 1,252 cases furnished by Dr. Howe, he constructed a life table, which shows a lower average of life among this class, which he attributed: 1. To inherent deficiency in vital power; 2. Narrow range of employments; 3. Accidents arising from inability to protect themselves. In the north temperate zone, there has been for ages, about the same average proportion of blind people, four or five thousand in every ten millions. Is this essential, or accidental? Dr. Elliott believed it to be accidental, and that it may be guarded against. The causes of congenital blindness are found in general habits of disregard of natural laws. Of those who become blind, the vast majority are born with deficiency of vital power; that is, with the conditions of blindness, which may be developed like any other congenital affection, by circumstances that the healthy subject will resist. The eyes are not easily destroyed, when there is full vital power in the system. Witness workers in mosaic, who show an astonishing power of endurance in the eyes. Men often work in smoke and dust, and wipe out great quantities of ashes and cinders from their eyes at night. In fact, it is almost incredible what wear and tear this delicate organ will sustain. The three chief causes of blindness are, scrofula, a general depraved bodily condition, and intermarriage between blood relations. Disease seldom destroys sight in persons whose eyes were originally strong. (*American Med. and Surg. Reporter.*)

The Ancient Flora of the North American Continent. At the late meeting of the Association for the Advancement of Science, Dr. Newberry gave a sketch of different floras on the North American continent, remarking that the Devonian and Carboniferous floras had been characterised by the prevalence of cryptogamous plants, as ferns, etc.; and that the floras of America during these ages strikingly resembled the European of the same epoch. At the beginning of the cretaceous era, the flora of the continent was revolutionised; the broad-leaved *dicotyledonous* plants were introduced, and the vegetation assumed the general aspect which it wears at the present day. Dr. Newberry concluded by saying, that the aspects of vegetation on America are of an antique type, and that the plants as well as many of the fishes are old fashioned forms.

American Medical Year-Book. Dr. O. C. Gibbs, of Frewsburg, New York, has issued a circular expressing his intention of issuing a yearly volume with the following title: *Year-Book of American Contributions to Medical Science and Literature.* It is designed that part first of each volume shall comprise an arranged and classified summary of, and index to, all the important and original papers found in the various medical journals of this country for the year immediately preceding. Part second will comprise a summary of, and index to, all papers found in the published transactions of the national and the various state and county medical societies. Part third will embrace reviews of all medical books of American authorship published during the year, with a summary of all the novelties in opinion or practice therein. To the above plan and arrangement, such other additions shall be made as time and circumstances may suggest. The first volume will be issued early in the spring of 1861. The work is to contain from 500 to 1000 pages, and furnished at the price of three dollars.

Formulæ for Creasote. M. Lebert employs a lotion consisting of from one to four parts of creasote to 1,000 of water, as an application in burns, and in putrid or cancerous ulcers; and in the treatment of wounds and ulcers M. Guibert applies charpie, soaked in a mixture composed of four ounces of glycerine and twelve drops of creasote. (*Bulletin de Thérapeutique*, July, p. 26, and *Dublin Hospital Gazette.*)

Cod-liver Oil incorporated with Bread. Take seven ounces of crumb of bread and toast it slightly; boil it then with one pound of water, and reduce to half; strain and heat again gently until you get a mass resembling gelatine. Add then three ounces of white sugar, and two drachms of isinglass. Take the mixture from the fire and allow it to cool. To four ounces of this mass, add the following compound: cod-liver oil, two ounces; cinnamon water, half an ounce; essence of lemon, twelve drops; the whole to be well pounded in a glass mortar. M. Balsi, who gives this formula, says that the white oil should be preferred, and that it should be recent and of good quality. (*Dublin Hospital Gazette.*)

HEALTH OF LONDON—SEPTEMBER 15TH, 1860.

[*From the Registrar-General's Report.*]

		Births.	Deaths.
During week	Boys.. 890 / Girls.. 842	1732 ..	962
Average of corresponding weeks 1850-9		1536 ..	1133

Among the causes of death were—bronchitis, 54; pneumonia, 51; phthisis, 123; small-pox, 7; scarlatina, 55; measles, 36; diphtheria, 4; hooping-cough, 25. The deaths from pulmonary diseases (exclusive of phthisis) were 121, being 43 above the corrected average.

Barometer:

Highest (Wed.) 30·171; lowest (Sat.) 29·395; mean 29·840.

Thermometer:

In sun—highest (Mon.) 116·0 degs.; lowest (Sun.) 83·0 degs.

In shade—highest (Th. & Fri.) 67·2 degs.; lowest (Wed.) 35·7 degs.

Mean—52·6 degrees; difference from mean of 43 yrs.—4·6 degrees.

Range—during week, 31·5 degrees; mean daily, 21·7 degrees.

Mean humidity of air (*saturation* = 100), 83.

Mean direction of wind, S.W.—Rain in inches, 0·08.

TO CORRESPONDENTS.

Anonymous Correspondents should always enclose their names to the Editor; not for publication, but in token of good faith. No attention can be paid to communications not thus authenticated.

Members should remember that corrections for the current week's Journal should not arrive later than Wednesday.

Communications have been received from:—DR. WOLLASTON; MR. W. SANDS COX; DR. A. T. H. WATERS; MR. RICHARD SEPHTON; W. H. W.; MR. J. STREATFEILD; MR. WM. SANKEY; DR. T. FRASER; DR. T. SKINNER; MR. N. CRISP; MR. T. L. PRIDHAM; MR. THOS. T. GRIFFITH; MR. J. V. SOLOMON; DR. E. SMITH; MR. J. POSTGATE; DR. H. DOBELL; DR. HINDS; DR. WHITEHEAD; MR. W. J. SQUARE; MR. P. C. PRICE; DR. KIDD; MR. A. PRICHARD; DR. T. ROBINSON; and MR. J. S. METFORD.

BOOKS RECEIVED.

[* *An Asterisk is prefixed to the Names of Members of the Association.*]

1. Urethro-Vaginal and Vesico-Vaginal Fistules: General Remarks. By N. Bozeman, M.D. New Orleans: 1860.
2. Application of the Button Suture to the Treatment of Varicose Dilatation of Veins. By N. Bozeman, M.D. New Orleans: 1860.
3. Cellular Pathology as based upon Physiological and Pathological Histology. By Rudolph Virchow. Translated from the Second Edition of the original, by Frank Chance, B.A., M.B., M.R.C.P. With Notes and numerous Emendations, and illustrated by 144 Engravings on Wood. London: John Churchill. 1860.
4. Chapters on Diseases of the Ovaries, translated by permission from Kiwisch's Clinical Lectures on the Special Pathology and Treatment of the Diseases of Women: With Notes and an Appendix on the Operation of Ovariotomy. By *John Clay. London: John Churchill. 1860.

ADVERTISEMENTS.

Annual Subscription, 7s.

Archives of Medicine. Edited by LIONEL BEALE, M.B., F.R.S.
No. VI, 3s. 6d., nearly ready.
Vol. I, 15s., now ready.
No more separate copies of Parts I and II can be issued.
All communications in future to be addressed to the Editor.
☞ Copies forwarded post free on receipt of a remittance for the Subscription.

On October 1, will be published, Octavo, with 10 Coloured Lithographs, and 43 Woodcuts, price 15s.

The Surgical Diseases of Children. By J. COOPER FORSTER, Assistant-Surgeon to, and Lecturer on Anatomy at, Guy's Hospital; and Surgeon to the Royal Infirmary for Children.
London: J. W. PARKER & SON, West Strand.

Now ready, price 5s. 6d., or free by post to any part of the United Kingdom, price 6s., Fourth Edition, greatly enlarged and improved,

A Grammatical Introduction to the LONDON PHARMACOPŒIA, and a KEY to PHYSICIANS' PRESCRIPTIONS. By F. S. LEACH.
"This little work will be found extremely useful to students who have received but an imperfect classical education."—*The Lancet.*
HUGHES and BUTLER, Medical Booksellers and Publishers, 15, St. Martin's-le-Grand.

Second Edition, price 1s., is now ready, of

Universities and Corporations under THE NEW MEDICAL ACT. An Address to the Graduates in Medicine, by J. HUGHES BENNETT, M.D., Professor of the Institutes of Medicine in the University of Edinburgh.
Edinburgh: A. & C. BLACK. London: LONGMAN & CO.

THE NEW SYDENHAM SOCIETY.

Frerichs's Clinical Treatise on Dis- EASES of the LIVER. Vol. I. has already been issued as part of the Series for the Current year. The undermentioned will complete that Series.

Dr. Bright's Clinical Memoirs on ABDOMINAL TUMOURS and INTUMESCENCE. Edited by Dr. BARLOW, and copiously illustrated.

A Year-Book of Medicine and Sur- GERY for 1859.

The First Fasciculus of an Atlas of ILLUSTRATIONS of DISEASES of the SKIN, copied from those of HEBRA.

Dr. BRIGHT'S CLINICAL MEMOIRS and the YEAR-BOOK WILL BE READY FOR ISSUE ALMOST IMMEDIATELY. The PORTRAITS of SKIN-DISEASES will be Three in number, and of Life-size. They will, it is hoped be ready in December.

The Council has the pleasure to announce that the Society now numbers 2850 Members.

A few copies of the Five Volumes which constituted the Series for 1859 still remain on hand, and may be obtained on payment of the Subscription for that year.

14, Finsbury Circus, E.C. JONATHAN HUTCHINSON, Secretary.

Fourth Edition, just published, price 2s. 6d., by post for 32 stamps.

A Guide to the Treatment of Dis- EASES OF THE SKIN; for the Use of the Student and General Practitioner. By THOMAS HUNT, Surgeon to the Western Dispensary for Diseases of the Skin. This edition contains two new chapters; one on the Vegetable Parasites of the Human Skin, the other on Metastasis in its practical bearings.
London: T. RICHARDS, 37, Great Queen Street.

Just published, One Vol. 8vo, price 16s.

On Obscure Diseases of the Brain and DISORDERS of the MIND: their Incipient Symptoms, Pathology, Diagnosis, Treatment and Prophylaxis.
By FORBES WINSLOW, M.D., D.C.L. Oxon., etc.
"Insanity is now no more incurable than half the physical diseases that afflict mankind. This change has been wrought by the humane labours and the genius of Pinel and his followers, of whom Dr. Forbes Winslow is perhaps the most illustrious. Dr. Winslow seeks to trace the steps by which cerebral disease advances, from its first dawn until the time comes when the lurid light of insanity shines out with a horrible and unmistakable glare, before which the torch of reason pales and is extinguished. This work is rich in the fruits of a great experience, reasoned with the subtle logic of an able dialectician, and pregnant with the honesty of a Christian philosopher."—*The Critic.*
London: JOHN CHURCHILL, New Burlington Street.

Lichen Islandicus, or Iceland Moss COCOA.
Manufactured by DUNN & HEWETT, London.
Strongly recommended by the Faculty in all cases of Debility, Indigestion, Consumption, and all Pulmonary and Chest Diseases.
The two articles here combined are well known for their nutritive qualities. The Moss contains a large portion of nitrogen, or flesh-producing substance: and being prepared by a very careful and peculiar process, which frees it from all the grittiness and disagreeable flavour which are always so unpleasant, is rendered perfectly pure, with nothing but the beneficial parts left.
The Cocoa, containing more nutriment than most articles of food, being combined with the Moss, forms in this mixture an article of the greatest importance to the Invalid, and at the same time beneficial to the healthy and robust, restoring health where it is declining, and retaining it where already enjoyed.
Testimonial from A. H. HASSALL, Esq., M.D.
"I have carefully examined, both microscopically and chemically, the preparation of Iceland Moss and Cocoa made by Messrs. Dunn and Hewett: I find it to be carefully manufactured with ingredients of the first quality.
"The combination of Iceland Moss and Cocoa forms a valuable article of diet, suited equally for the robust and for invalids, especially those whose digestion is impaired. It is very nutritious, of easy digestibility, and it possesses, moreover, tonic properties." (Signed) A. H. HASSALL, M.D.

S. Bowles (late Windsor & Co.), Phial AND BOTTLE MERCHANT, Dealer in Druggists' Sundries, etc., 6, JAMES STREET, COVENT GARDEN, W.C. The cheapest house in London for every description of Medical Glass of the best quality. Samples and prices forwarded free on application.

Great Saving in the Purchase of SIX GROSS of NEW MEDICAL GLASS BOTTLES and PHIALS, assorted to suit the convenience of Purchasers, at S. ISAACS & SON, Glass Bottle Manufacturers—London Warehouse, 24 and 25, Francis St., Tottenham Court Road.

6 and 8 oz., any shape, plain, or graduated	8s. 0d.	per gross.
3 and 4 oz. ditto ditto	7s. 6d.	„
½ oz. Moulded Phials	4s. 6d.	„
1 oz. ditto	5s. 6d.	„
1½ oz. ditto	6s. 0d.	„
2 oz. ditto	7s. 0d.	„

NOTICE.—S. ISAACS & SON beg to return their sincere thanks to the Medical Profession for past favours, and beg to inform them that in consequence of the great increase in their business, they have removed to more extensive premises, and hope by adhering to their usual attention and punctuality to receive a continuance of their favours at their new London Warehouses, 24 and 25, Francis Street, Tottenham Court Road. Packages free. Remittance on receipt of Goods Post-office Orders payable to S. ISAACS and SON, at the Post Office, Tottenham Court Road. Bankers—Unity Bank.

TRADE B/P MARK.
BROWN & POLSON'S
Patent Corn Flour.
The Lancet States,
"THIS IS SUPERIOR TO ANYTHING OF THE KIND KNOWN."

First of the kind Manufactured and Patented in the United Kingdom and France, as explained, with Engravings, in *The Illustrated London News* of May 26th. Supplied by BROWN & POLSON, to Her Majesty the Queen, by order from Buckingham Palace. It is in great favour wherever it has been made known, for Puddings, Blanc-mange, etc., preferred to the best arrow-root, and especially suited to the delicacy of Children and Invalids.
BROWN & POLSON, Manufacturers and Purveyors to Her Majesty: Paisley, Manchester, Dublin, and London.